NATURE MAGAZINE
VOLUME 26 · OCTOBER · 1935 · NUMBER 4

WILD BROTHER'S SECRET HOMES

By ARCHIBALD RUTLEDGE

Illustrated by Benson B. Moore

FROM early childhood I was fascinated by the living creatures that haunted our plantation woods. Up usually at daybreak, and out until the evening shadows obliterated our world, I never found a day too long, so engrossed was I in all the living wonder about me. And often at night I stole out alone on the porch to listen to the weird laughter of the barred owls, and to the mordant, rasping bark of the foxes.

One subject of especial interest that enthralled me was the matter of the secret homes of wild creatures. I loved to try to discover just where they made their habitations.

Nearly every day, at Montgomery Branch, I used to stop while riding to school to watch the hidden home of a trap-door spider. It was not more than a foot off the road—a tiny domicile fashioned out of the material immediately at hand. But only the entrance was visible; and sometimes, when the turf-door was closed, so blended was that miniature circular cover with the adjacent grasses that it was almost impossible to distinguish it. What fascinated me most was the delicate hinge of grass-roots on which the door accurately opened and closed. Here was an obscure insect applying with foresight and judgment one of the great principles of mechanics!

"I USED TO STOP TO WATCH THE HIDDEN HOME OF A TRAP-DOOR SPIDER"

One of the most engaging wild homes I ever saw, I came upon by merest chance. One day, in the course of attempting to dry a waste ricefield, it was necessary for me to dislodge a massive pile of logs and old trash in order to drain an ancient canal which had become choked by this obstruction. A more muddy task could hardly be imagined,—certainly not one calculated to reveal the poetic and truly glamourous sight that I was soon privileged to see. I was more than paid for my mud-delving.

After some very slippery work, the obstruction was removed, and the channel was dried. Then, for the first time, I saw under the shelf of the bank that had been exposed by the moving of the old brush, a furnished apartment of the wilderness! It was the home of an otter —one of the most shy and yet one of the most gallant of all wild creatures. He was not at home, but he had lately been there, as I could tell by the fresh tracks. Indeed, the little cave under the green bank was damp in places, with glistening drops of water here and there that had no doubt been shed from the otter's coat when he had come home *via* the water-route. What chiefly interested me was the fact that the entrance to the hole had been *under* the water. A little tunnel led up into the dry warm cave, into which the owner had brought grass and sticks for a bed. The obstructions that I had removed had completely hidden this secret home. I replaced enough to conceal it effectively, knowing that the water would soon be back in the canal, making the place look normal.

A week later I was happy to find that the otter was still using his little Venetian dwelling; for I saw him swim boldly up the long canal, pause before his front door, bump himself gracefully into a perpendicular dive, and disappear beneath the water, his long furred tail waving.

The mink, the muskrat, and the alligator have these secret homes under banks; but this otter's was the only one I ever actually examined that had a special passage opening beneath the water. To get home, most of these amphibians crawl "up and under."

One April day, just off the edge of a cottonfield, I

noticed a meadow lark quite near me on the ground. She was running along sedulously, pausing to look back at me with bright, anxious eyes. I knew she had left her nest; for this bird tries never to fly *from* her nest, but rises at some distance from it. The secret home I discovered was delicately arched over by tender grasses, and was open only at one side, so that it was impossible to see the five eggs unless I stood in a particular position and peered in. The bobwhite sometimes arches his nest, but he is not nearly so scrupulous in this respect as is the lark.

In the sense that they have no regular haunt, the wild deer have no home save the wide and fragrant forest. Wherever they are hunted, they move about only at night and in the dim hours of dawn and twilight. But they often have favorite daytime resorts; and it is a well known fact that a deer will often return, day after day, to the same bed. I once found such a secret home in the dead top of a prostrate pine. The needles were still on the limbs, hanging there like a tattered brown arras. Here was a snug shelter, and at the same time a fringe curtained

"I NOTICED A MEADOW LARK QUITE NEAR ME ON THE GROUND. SHE WAS RUNNING ALONG SEDULOUSLY, PAUSING TO LOOK BACK AT ME WITH BRIGHT, ANXIOUS EYES"

it, through which the couched deer could look during the period of his daytime drowsing.

The deer's bed looked small, but that fact is due to his habit of curling himself up. It was in deep broomgrass just in front of a heavy fork in the pine. Here, then, were perfect conditions for a long, serene siesta.

With a little practice in observation one can tell the difference between a daytime deer-bed and a night-time one. Being a ruminant, the deer likes to lie down occasionally during the dark hours, resting himself between spells of voracious browsing. Deer lie down at night in open grassy woods, and their beds are only slight depressions; where they couch by day, their beds are deep and definite—much like the "form" that a rabbit makes, though I have never known a deer to scoop out a bed in the earth as a bunny will sometimes do.

Two deer-beds that might in a way be called "secret homes" seem to me to deserve especial mention. One was in the middle of a pond!

Walking one morning on the blossomy edges of Fox Bay, a dense thicket of sweet bay and myrtle on the far borders of Elmwood, the plantation adjoining ours, I came to a small lagoon glimmering beneath the lustral gaze of huge yellow pines and noble bald cypresses. The pond, not more than a half-acre in extent, was one of the placid, windless places, mirroring with a mystic enhancement of beauty the great trees, the sky with its softly sailing flotillas of clouds, and the fragrant humble bushes on its banks. I could not pass it without pausing to admire it. . . . Subtle peace crept into my heart as I gazed at the spiritual perpetual springtime of that Lethe-lake.

Almost in the very middle of it was a tiny hummock, not larger than the blotter on milady's desk—a green hillock standing only a few inches above the still waters. . . . From the moment that my eye caught sight of this elfin islet, the place did not look quite natural. Its color did not quite harmonize with the dark wine of the waters and the tender emerald of the trees and the grasses. Then I perceived that a deer was curled up on the miniature island—a full-grown stag in all the beauty of his fresh winter coat and his splendid crown of antlers. He saw me, of course, and as a result he was making himself as small as possible. A deer lies down like a cow, and sleeps with his head against his flank; but at the slightest alarm, he is either up and away, or else crouches low in the hope that he will be passed by unnoticed. This stag now had his "head on his paws," like a dog—if the figure may be permitted. And I could see his great liquid eyes fixed steadfastly on me.

Probably two things had attracted that buck to this singular yet delightful resting-place. One was the natural beauty and peace of the place—a dreamlike idyllic oasis in the very heart of the immense wild forest. Another was the safety conferred by such a retreat; for if a deer crosses water before lying down, a pursuer on his track will be temporarily baffled, thus affording the deer the security of a warning, and the vital chance for a wary escape.

I have already told that on the border of the pineland, about a quarter of a mile from the house, was the negro burying ground. Than this melancholy, fair place I know of none more impressive, more wild and sweet, more touched with all the lights and shades of immortal hope, of immortal doubt. In such a place Dante might have been inspired to write both the *Inferno* and the *Paradiso*. Here, for generations, the negroes of the plantation were buried; and to this sacred place are brought today those who have died far from home. It is often the last wish

of a negro who has in him the plantation strain to be laid where his fathers sleep. Nor indeed could he have "couch more magnificent." For here are ten acres of virgin woodland, inviolate from colonial times, sun-steeped, moon-blanched, remote, beautiful. Here soar great yellow pines, banded with huge vines, moss-wreathed, fit for the masts of majestic brigantines. Here myrtle and holly make a dim and fragrant sanctuary. Here over all the undergrowth and over the lower trees riots the yellow jasmine.

This place was always very sacred to me. It had an air of ineffable beauty, of everlasting peace. It was a wild, tremendous minster, in which, I think, the human spirit could approach God intimately, the reason being that it is His, and He made it.

But this still place was not only the sanctuary of the dead, but of the living as well. For it was here that the timid does repaired in the mid-rapture of springtime and of motherhood to give birth to and secrete their fawns. I knew one doe—she and I were old acquaintances—to raise three fawns in successive years in this same stretch of solitary, idyllic woodland. I knew a buck, a doe, and a fawn to make this their home for a whole year, and the doe and her grown daughter for a second year. The buck was probably killed by hunters in the pinelands. A buck fawn, born in this graveyard, made it his home until, as a stately ten-pointer, he went the usual way of great bucks. I do not mean that he stayed in the graveyard all the time. Had he so stayed, he might have lived for twenty years or so—the probable limit of a deer's lease on life. But this vast thicket was the place where regularly he went to dream away in safety his leisure hours.

"THE TRUTH ABOUT THE MOCKING-BIRD IS THAT HE IS AN ARTIST"

The range of a deer is comparatively small, and if given quiet and a moderate supply of food, the range may be limited. A wild turkey's range is likely to be far more erratic; and for this difference two reasons may be suggested: one is the turkey's greater objection to even the slightest disturbance (a deer will take a siesta quite composedly, and with perfect equanimity will chew his cud with all the ordinary noises of a plantation going on about him—negroes shouting, axes ringing, dogs barking—but they must be noises to which he is used). A deer, I am afraid we must admit, is no more particular about his food than an ordinary goat (not a Harlem one). The deer is a great browser; and while he sometimes tickles his palate with mushrooms, acorns, peanuts, sweet potatoes, and other dainties—succulent grasses, leaves, and twigs form the mainstay of his ordinary repast. The wild turkey forages on the ground and takes the fruits from low vines and bushes. Once I saw a gobbler, with the utmost delicacy of genuinely high art, stripping the serried clusters of seeds from the tops of foxtail grass. Both the deer and the turkey range to feed, but the turkey ranges farther; and often the lack of food or the suspicion of danger will make him take flight, a flight that may bear him across the river. Often I have reared flocks of wild turkeys close to the house, only to have them disappear in the winter and then come bashfully trooping back in the spring. The turkey apparently likes to nest in the same kind of country or, better still, in the same section in which it was born.

While it was pleasant to have attractive wild creatures loving the place that you also call home, there were other permanent residents on the plantation with whom I would fain have dispensed. There was an old male wildcat toward whom I bore ancient enmity; but his craftiness, Oriental in its sinuousness, moved in an orbit outside of mine. There was a great diamond-back rattler that had thrice been seen in the same place. Prince saw him twice and the result of the encounter was the utter respect that Prince displayed toward his superior. The attitude of any negro toward a rattlesnake is likely to be deferential, even conciliatory; and Prince was true to type.

"But Prince," I asked, "why don't you kill this snake? You know he'll kill that cow of yours one of these days. Don't you need your cow the most?"

Prince regarded me in a manner that did small respect to my judgment.

"Kill him? I kill him? He heap himself high as a meetin' house, and he ring the bell in the steeple, and he gaze at me. Kill ain't the thing for do; run is the thing for do."

Seeing the business as he did, Prince was probably wise to mind his own affairs. Meanwhile, however, this chimera persisted in calling the plantation home. And, judging by his size, I believe he had been there almost as long as I had.

While the rattlesnake is a charmer in his own sinister way, I knew another fascinator, without whose blithe

companionship I should have been bereft indeed. And he was a lover of the ancient little garden beside the front porch. Some of his family had always lived there. They had sung and loved, fought and grieved, lived and died in this home. I know not a bird that has a more lyric passion for home than has the mocking-bird.

There was an ancient gnarled cedar post over which a jasmine had clambered luxuriously, lowering softly over the gaunt skeleton of its support starred tapestries of lustrous greenery. Near this was a rose bush. Near the rose was a wild-orange tree. Beyond that was a spirea bush. These were the mansions of my mocking-bird. He was always in one of the four places, except when he was fiercely harrying some intruder rash enough to invade the inviolate, or when he was in the air above his castles deluging them and me with a delirious yet silver-cool and heart-certain song of joy.

"THE DEER'S BED LOOKED SMALL, BUT THAT FACT IS DUE TO HIS HABIT OF CURLING HIMSELF UP"

The truth about a mocking-bird is that he is an artist, and nothing irritates him more than intrusion. Blue jays, crows, robins, tiny wrens, and even black buzzards were driven wildly away by this slim gray-coated champion, who had as much courage as music in his heart.

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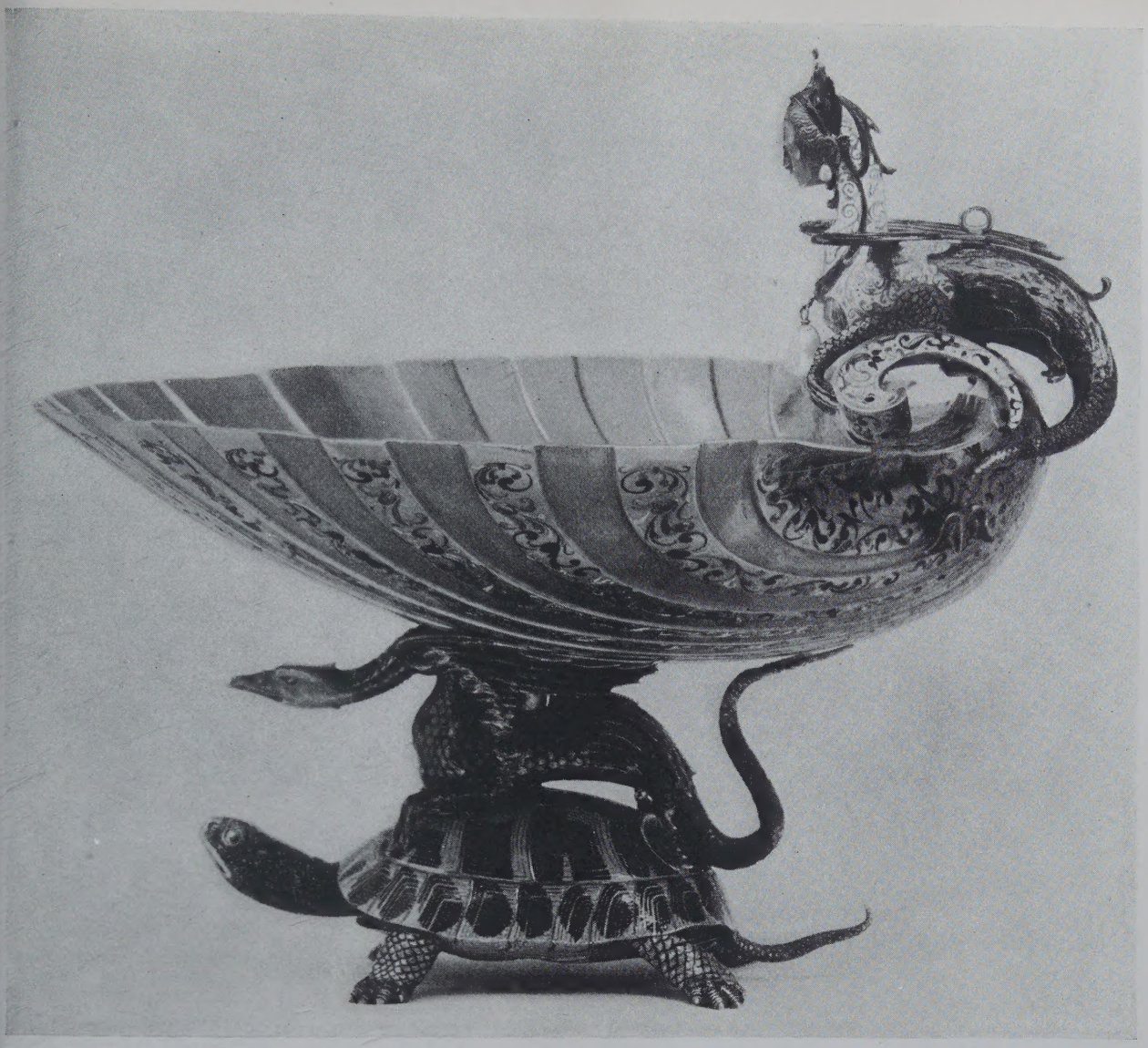
A MEXICAN HUMMINGBIRD *By* MEDORA MORROW

Just outside our sleeping porch a wild grape vine has grown, its tendrils clinging to the wire screen. One morning we discovered a hummingbird nest almost completed on one pendant branch, and the tiny mother was whizzing about putting on the finishing touches. Soon there were two tiny eggs looking like white navy beans and the mother began to sit, undisturbed by our prying eyes. In the breeze the nest swayed against the background of the mountain we call "Hat Mountain" because it looks like a sombrero.

While we were away for eleven days at Acapulco one egg hatched, producing a tiny and ugly blackish ball. For three weeks the mother constantly darted about gorging the youngster with food. Never once did father appear. The baby grew miraculously, finally getting so big that his head stuck out of the nest and his now long bill popped very widely open at the slightest noise.

One afternoon the mother was missing. So we cut a slit in the screen and fed the youngster honey and water with a medicine dropper. That night there was a cold wind. I wanted to cover the baby with wool cloth but Pauline voted me down, insisting that the mother might come. The next morning she did, and went on for three more weeks feeding the baby.

Then one morning we noticed a beautiful male bird, brilliant green of breast and blue and iridescent of head. He chirped and called, flying about the nest and to the flowering peach tree. The youngster flapped his wings and seemed nervous. His eyes shone like black diamonds. He perched on the edge of the nest. The father chattered, seeming to urge him on. Off the little fellow went. He fell to the ground, bounced about a bit, spread his wings and was gone. Since then the nest has been deserted and we miss him.



THE CELLINI CUP, ONE OF THE MASTERPIECES OF A MASTER

The shell gave him inspiration in fashioning this perfect thing now preserved in the Altman Collection in the Metropolitan Museum in New York. It is valued at a million dollars

THE MOLLUSK AND ART

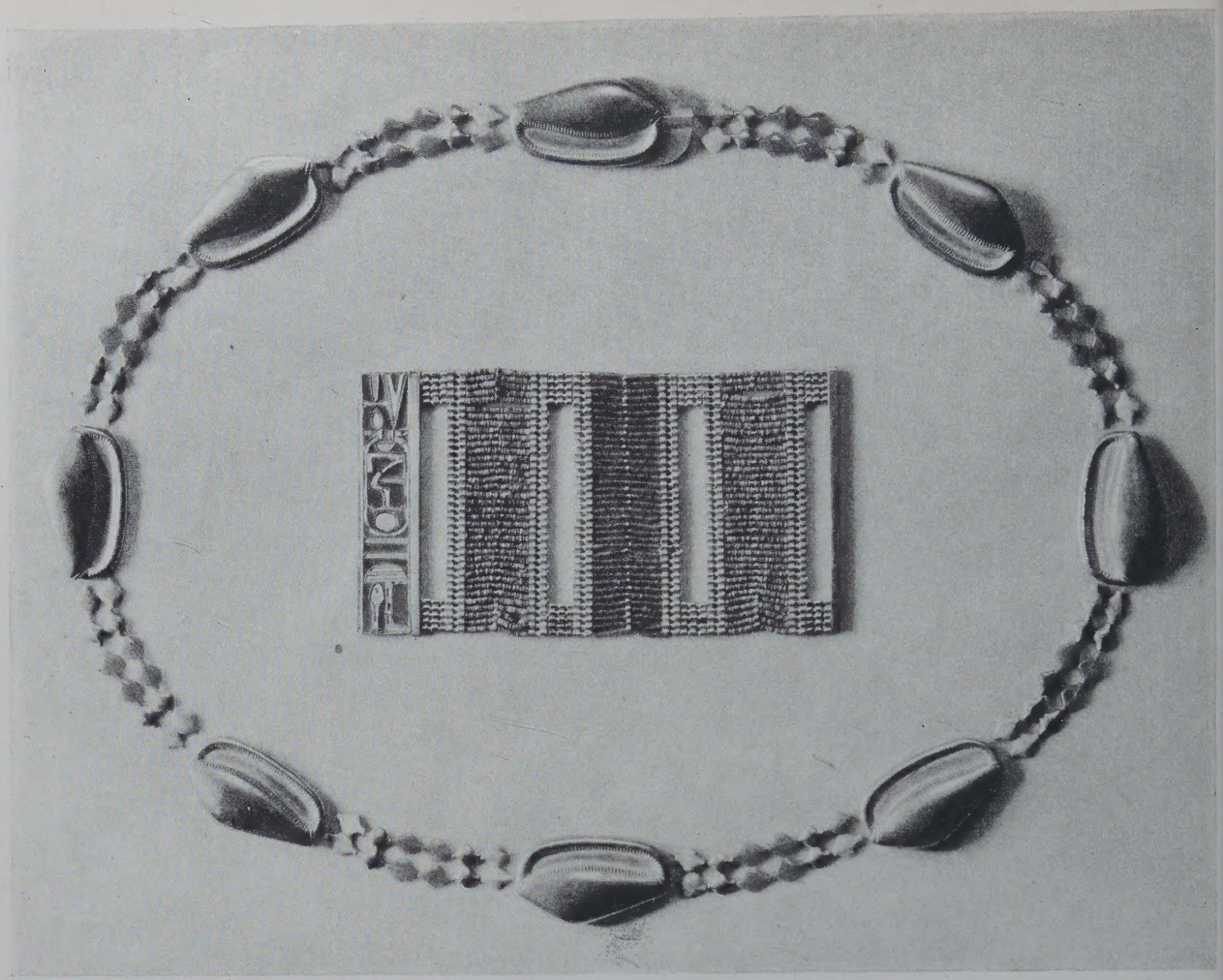
Through the centuries it has inspired the greatest artists

By HERBERT BEARL

Photographs Courtesy of the Metropolitan Museum of Art

All of us at one time or another have been curious as to the place various specific biological forms have had in bygone civilizations and in former cultures. Just as we humans are proud of our heritage, so the sea shell is proud of his. Of all the inhabitants of the sea, living and extinct, large and small, the mollusk stakes his claim for the right to be called the most beautiful and the most important. In support of the latter quality, the mollusk offers his prehistoric life, for without that the science of geology could not have progressed. In support of the former quality—beauty—one must only look at the mollusk's historical record as an inspiration to artists throughout the centuries.

Four thousand years ago the Egyptians flourished in the valley of the Nile River. They were talented, religious, and lovers of beauty. They were most gifted in the plastic art of carving and modelling. Evidence of this is shown in their tremendous pyramids, gigantic chiseled deities, and colossal sphinx-like creatures. The pyramids of Egypt served as tombs for the dead kings and their families. It was necessary to have such impenetrable structures because all the jewels of the dead as well as valuable vases



FOUND IN THE TOMB OF THE EGYPTIAN PRINCESS SIT-HATHOR-IUNET

A girdle of eight golden cowry shells made by some ancient craftsman and joined together by beads of gold fashioned after the seeds of the acacia

and statues were buried with them. Thieves often tried to sack these tombs but invariably failed. In the pyramid at Lahun, which was built by King Se'n-Wosret II, Sir Flinders Petrie, the famous English archaeologist, found one of the most valuable jewel collections ever excavated. These were the property of Princess Sit-hathor-iunet, the daughter of the aforementioned king. There was one girdle in particular that attracted wide attention. It consisted of eight golden cowry shells, all hand wrought, and two strings of beads, in gold, connecting each shell. The beads are shaped like the seed pods of the Egyptian acacia plant. In each cowry a little pellet of silver-bronze was inserted so that the shells jingled as the wearer moved. Similar necklaces and girdles were excavated in other parts of Egypt. Some were made out of the shells themselves, while others were carved in carnelian and amethyst. Cowries were not the only shells that fascinated the Egyptian princesses. Cockles, snails, oysters, murex, whelks, dolium, and purples were equally attractive. The smaller bivalves and univalves were used as beads, while the larger univalves, especially *Dolium* and *Buccinium*, were cut off at the top and made into horns. The large bivalves were used as receptacles for cosmetics and incense, as ink saucers, wrist guards, and warrior badges. The mollusks were gifts from the God of the Sea, and many a princess' head could be turned for one. When the shells themselves were not on hand, their images were made in gold and displayed as amulets and other forms of ornament.

Contemporary with the Egyptian civilization was the Minoan across the Mediterranean. These people were interested in the smaller and minor arts instead of the colossal art of their neighbors. Unlike the Egyptians, their buildings and statuary were small. But they did resemble Egypt in one way: they admired the sea shell. When Sir Arthur Evans, another noted English archaeologist, first found a few cockles at Cnossus, Crete, he thought he had dug up some fossils, so perfectly were these shells carved. On later inspection, they proved to be painted terra-cotta. The Minoans went a step farther in using sea shells in design. They employed the beautiful little form in decorating their pottery. One can safely say that hundreds of vases were adorned with designs of the cuttlefish, nautilus, trophon, and octopus. Here we find that the sea shell is first represented in paint. The large *Dolium* and *Fasciolaria* shells were used in several palaces in Crete as trumpets. It is not very far from Crete to the mainland which today is known as Greece.

This brings us down to the First Century, B. C. Although some of the old conventional Egyptian ideas were employed in the earlier Greek art, it was not long before

this civilization was making its own tradition and not relying on that of others. Here again the sea shell tempted the eye of man with its beautiful form and colors. The genus *Dolium* is found in several places and is thought to have been used as a toilet article. The shape of the scallop occurs engraved on oil lamps that were made out of clay. In vases shell designs are executed and some even assumed the likeness of shells themselves. Plates are decorated with fish designs and that of cockles, cowries and trophons. It was during this period—the Golden Age of Pericles—when all eyes were directed toward the accomplishments of Phidias on the Acropolis, of Plato and Aristotle in philosophy, and Pythagoras in mathematics, that we find the contours of mollusks definitely surviving in art, and the animal itself the cause of much scholarly speculation. Architects used sea shell motifs in cornices; philosophers worried over the nature of these weird and beautiful denizens of the sea. As a result, the layman continued to be conscious of the conchological beauty that tightly gripped the key to splendor, delicacy, grace, and elegance. The Greek civilization soon gave way to the Roman.

THE SCALLOP IN FURNITURE
It is an important item in the design of the Chippendale chair from Eighteenth Century England

It is difficult to find much art that is truly Roman. The Romans took all the creations of their predecessors, destroyed them, and then made their own after the same manner. The Romans were luxurious, and thought more about their stomachs than their minds. It was in Baiae, a famous resort for wealthy Romans, that the first oysters were eaten. At least, so says Pliny, author of the first Natural History. Toward the end of the Roman period, a new art arose. It came with the beginning of the Christian Era. The art of this period was crude and pagan images were still employed.

There is a sarcophagus in the Museum of the Lateran that is called the "Theological Sarcophagus." It is of stone and intricately carved. On the side is an image of the deceased. The portrait is surrounded by a symmetrical scallop shell, which is carved. The use of a circle around the image of one dead is a symbol of immortality and is called a clypeus. In this particular coffin one finds the sea shell representing the idea of immortality. There are many more such sarcophagi. We also find the sea shell appearing in the design of some of the Catacomb paintings of the same time, and up to the Thirteenth Century, A.D., in the mosaics of the various church walls.

Even Byzantine artists adopted the sea shell motif. It is frequently used in ivory carvings, in triptychs, and small paintings.

The Dark Ages was a period of decadence for the sea shell as well as other forms in art. With the coming of the Renaissance in literature, music, and science, there was a coincident rebirth of the sea shell motif in art. In Naples and Florence sculptors could not use this motif enough. It fitted so well into niches, arches, and architecture in general. Such artists as Ghiberti, Donatello, Fra Angelico, Michelangelo, and Botticelli recognized the shell's existence. The painting by Botticelli, "The Birth of Venus," is a delightful venture into poesy. In this painting Venus is seen riding the waves on a large scallop. She is blown by two Zephyrs while Spring waits on the shore with a cloak for the nude goddess.

The Sixteenth Century heaped new glories on the sea shell: it established its representation in all the plastic arts. In sculpture, one can see it used in the Church of San Pedro at Orcana, Spain. It was about this time that the scallop was identified with St. James, and bore thus an added significance. Hence, it was an appropriate design in churches. The alabaster relief of a "Putti Supporting a Shell" is one of six groups. In each group the sea shell was used. The scallop itself almost has an angelic appearance with its two little wings. Many other churches in Spain and Mexico to this day have used the scallop in their architecture. One of the most famous of painters of the Sixteenth Century was Hieronymus Bosch. He took great delight in portraying religious and Biblical scenes in a way that is inimitable. His delightful paintings of weird subjects and odd creatures have never been duplicated. Attributed to his school is the painting, "The Temptation of Saint Anthony." Many works have been made of the same subject. None have the slightest resemblance to that of Bosch. The sea shell to Bosch is another form of temptation. In "The Temptation of St. Anthony" a bivalve is riding on the back of a fish, up in the air, and in pursuit of a pearl. A univalve is lying open in the immediate foreground and close to St. Anthony. It is difficult to identify any of the other creations. They are unbelievable and awesome. Lucas Cranach used the sea shell in his Biblical paintings too.

One of the greatest craftsmen of all times was Ben-

venuto Cellini. There are so few of his works that have been actually identified that what the world does possess is quite priceless. The Cellini Cup, in the Metropolitan Museum of Art in New York, is valued at approximately one million dollars. This valuable gold vessel is simply one large scallop shell. It is resting on the back of a turtle, carefully adorned with black enamel. Between the shell and the turtle is a little dragon of blue, green, and red enamel interspersed with gold. These same enamels were used on the exterior ribs of the scallop and on the mermaid perched on the shell's wings. A pearl hangs from the neck of the mermaid and seems to tease the gaping valve of the scallop. The occasion for making the vessel is not known except that it was thought to be for Francis I of France. In most of Cellini's work the sea shell idea is used in some manner, thus having met the taste of a master craftsman. Toward the end of the century, Bernini, an Italian Baroque sculptor, constructed two fountains in Rome using the scallop in one and conch shells in the other. They still stand today.

The next century gave the world an artist that one can never forget or hesitate to admire, Rembrandt van Rijn. He was one of the few artists who was able to incorporate character and feeling in his portraits. Outside of painting, he was a master etcher. As an example of his ability, we have remaining today the etching he made of a cone shell. The play of light and shade on the curved surface, and the interesting pattern made by the shell's external markings are almost as beautiful as the physical shell itself. The etching even has a nacreous effect. This etching was made by Rembrandt for a friend in Holland, where the hobby of making cabinet collections of shells was very popular at the time. This engraving is one of the rarest of all the artist's work.

Coming down to our own century, we find sea shells appearing here and there in art. In sculpture, architecture, tapestries, paintings, jewelry, and furniture. During the Eighteenth Century in England and America most furniture had sea shell carving. The Chippendale furniture had the scallop on the legs and backs of chairs, bureaus, and chests. Even today, with careful observation, one is certain to see the sea shell in the design of many of our public buildings. Contemporary artists are not the least bit hesitant in employing what their ancestors four thousand years ago idealized. Just as in the past the sea shell was a thing of beauty, so it is today and will be in years to come. And of all the gems that Nature lends for the inspiration of man, none excel the beauteous shells.

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Indigo Bunting's Nest

By A COUNTRY CONTRIBUTOR

THE members of the Garden Club were to make a tour of our garden. I was engaged in doing some extra weeding before their arrival, when a sharp staccato bird call of "pitt pitt" sounded from a nearby tree. Thinking the bird did not mean me, I went on nearer the path to admire a group of hollyhocks and, to my surprise, found a strange white ball, almost completely hidden in the center of the group, about three feet from the ground. No hollyhock ever looked like that amazing, fringed, snowy blossom. What could it be? It almost took my breath as I stepped nearer to examine it and saw a small brownish bird cuddled down close inside. Her little beady eyes looked almost as startled as mine must have been. She finally flew away, and four little bluish-white eggs were in the nest.

No nest like this had ever been built on our lawn before. The inside was woven smoothly of fine grass; the outside had been woven as carefully with narrow, finely-cut tissue paper such as jewelers use for packing silver. The nest was fastened neatly on three leafy branches of a tall lambs-quarters—a weed I had intended to pull up. The gray fastenings down in the edge of the nest looked like papier-mâché, but there were a number of guy ropes of the tissue paper strips twisted and firmly anchored around the hollyhocks. The weed was let alone with its pretty home. The nest it held out-ranked any flower.

For days we had been hearing the rapid tinkling warble—"July, July, Summer, Summer is here, morning, noontide, evening, list to me"—of the male indigo bunting, but we had only caught glimpses of his swift little royal blue body darting from tree to tree along the path. That was the clue; the indigo buntings had preempted that place in the hollyhocks and made a home. We watched them carefully, and it was not long until the eggs were hatched and the youngsters growing. The father and mother had learned we were friends and we became well acquainted with the little family.

The indigo buntings are helpful to the gardener. We usually find them in our berry garden. This pair nested again nearer the house and raised another brood, this time in a rose bush. The memory of the male bird taking a bath delights me still—it was one of the most graceful performances ever witnessed as he dipped and glistened in the sunshine and shook the drops from his bright feathers.

WOL, THE SWEET

By
KATHLEEN HILL BUCHER

Illustrations by the Author

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This is a story of the tiny owl peculiar to the Island of Cuba and known by the name of *Glaucidium siju*. Of it Barbour says: "These little earless owls are quite tame and are both diurnal and nocturnal. They live not only in the woods but about orchards and gardens. They nest in hollow trees, usually in an old woodpecker hole. The call reminds one of the screech owl's but is much sharper and more shrill." The picture of Wol here is natural size.

WHIRLED at the end of a string! Poor Wol! We heard his pitiful shrill cries, the hateful laughter of the cowherd, and ran from the veranda, around the hedge and into the lane. Angelito, which means "Little Angel", had Wol, a pygmy owl, tied by the leg with a string, whirling it around his head. We knew better than to scold one of his type. If we had he would have returned each day to torture some animal before us, or where we could hear. So we took another method to rescue the owl.

"Oh! What is it?" we cried. "Let us see it. How cute! Where did you get it? Give it to us."

I took it in my hand. How tiny! The body was no bigger than that of a baby chicken. The leg was bleeding, all the skin being worn away just where the feathers began. He pecked at me angrily, blinking his lovely yellow eyes and screaming in a desperate tone.

"Angelito, please give him to us. You know that my husband has been trying for years to get one of these little owls. He hoped that you would be able to get him one from the nest in your pasture. Is this one from there? Where did you catch him?"

Angelito was beaming with generosity by this time. He would have given us a dozen owls and one of his father's calves. He was not a bad boy, but just the product of his surroundings.

"Take him," he said with a fine gesture. "I got him for your husband. It is a 'Sijú' [pronounced see who,

Wol in a variety of his poses, although he was not easy to sketch and refused to turn his back for a rear view. The upper part of the head is light brown, the feathers with dirty white spots, the face dirty white with brownish tints. The feathers have dark brown stripes, the thighs reddish and the lower tail coverts white.

accent on the who]. Some boys and I caught it in the river bottom. You must feed it raw meat. I have to go to the high hill pasture now, but I'll try to bring another later. Adiós!"

Wol had a name already. Since we have read *Winnie the Pooh* all owls are "Wol". We carried Wol into the house, cut away the bloody string, dressed the wound, and put him into the screened butterfly hatching cage. We left him in a dark corner to calm down, and waited impatiently to see my husband's surprise.

As soon as we heard the car coming in at noon we all rushed out yelling, "Come see the surprise! We've got something that you wanted. It's cute, but it's hurt." With shining eyes my husband ran up the steps, looking over the veranda with his keen glance. He knew from our excitement that there must be something wonderful. As soon as he spied the little cage he dropped to his knees before it and peered in. With a delighted cry he opened the button on the lid and put in a hand to pick up Wol. Wol, with a hostile squeak, tweaked Conrad's finger, but was picked up anyway.

"What a beautiful little fellow. See, he has no ear tufts. And such a funny beard! Has he eaten? Poor little leg! How swollen it is already! Let's feed him."

"We were waiting for you to give him the beef, and we have a bit of fresh chicken, too. Harold, run get both."

Harold brought the meat. My husband put Wol back into the cage and put in the tiny piece of beef. Wol snatched it in one claw, held it in the air, then put it down and backed against the opposite wire glaring at us, but he would not eat then. His eyes had a greedy look.

We went in to luncheon and when we had finished we peeped out of the front bedroom window to watch him eating. He was standing on the beef in the funniest attitude. His legs were stretched out straight, holding his body high. All of his feathers were lying flat and smooth so that he looked thin and slick instead of like a fluffy ball. His head was bent down while his curved bill tore off bits of meat. He would pump up and down until he tore off a bit and then he would straighten up to swallow it. He picked it to shreds, eating only the tender parts. When he moved he scolded us. As soon as he had enough to eat he preened his feathers, fluffed up, half closed his eyes and settled to sleep in the afternoon sun that filtered through the jasmine vines.

His sleeping was amusing. He would nod, with his eyes nearly closed until he was so sleepy that he would sway forward. Then he would start up with a jerk, glance around, like a person dozing in church, glare and blink, and nod again. We never tired of watching him at his sleeping.

Wol had a variety of notes. His most characteristic and inimitable call was generally at night. He would call a high thin note, like a whistle, followed after a few seconds by a similar note just a trifle shorter. Whistle followed whistle at closer intervals, each note shorter, until they came so close together that they tumbled over each other. I have never heard another bird make such short, quick, successive notes. After one of these calls he would be quiet for a long time. Sometimes he would make little soft twitters like a sleepy mocking-bird. All of his calls were musical.

The men made him a larger cage from a Spanish olive oil packing case. It had two kinds of perches and a little separate house with a removable roof to make the cleaning easier. The door was a round hole just big enough

for him to squeeze through. Often he slept in his house and no one could see him in the dark. If he heard a noise he would peep out holding his head on one side.

When I used to try to draw him, he would never let me get a back view. Then I would ask one of the children to go on the other side, but the only result was a merry-go-round. I would start a lot of positions on a big sheet and grab a stroke at whichever one he was in when I glanced up. If he was sleepy he would face me and let me draw all that I wanted to, but I was never able to tire him so that he would turn his back or let me sneak up on him. But he got so he would let me watch him eat.

He did not like strangers or bad boys, and always shrieked at them. We kept him on the front veranda where he could be alone most of the time.

Dr. Charles Ramsden, one of Cuba's best naturalists, says that he had a tame pygmy owl in Guantánamo. He used to carry it in his pocket to the amusement of all the natives. His owl seemed to know how cute he was and would poke his head out whenever he had an audience.

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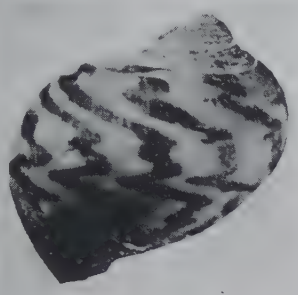
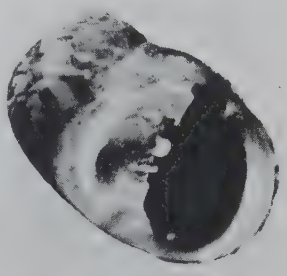


The Bleeding Tooth

By P. A. MORRIS



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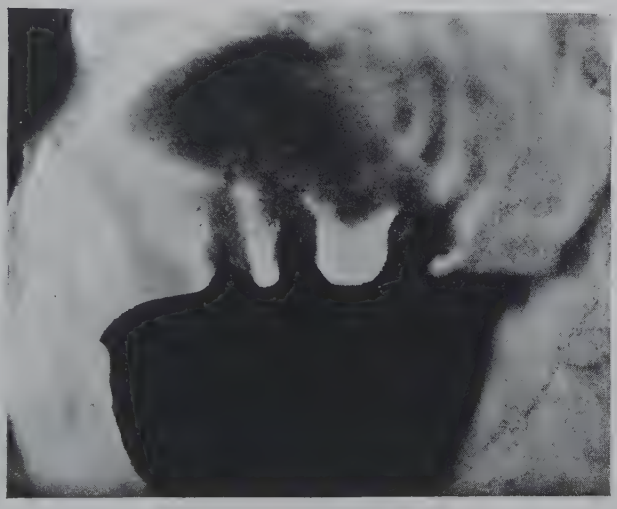
At the left and right are two views of the bleeding tooth snail, Nerita peleronta, and, below, an enlargement showing the stained teeth from which comes the name



THE "Bleeding Tooth" is a rather strongly built snail about one and one half inches long, and gayly colored. Zigzag bars of red, black and purple on a creamy gray background make it a handsome shell. Turn one over and look into it, and you will see how well it deserves its name. Just inside the aperture are two gleaming white tooth-like projections. The bottom of one (or both) of these teeth is stained with a blotch of reddish-orange, looking for all the world like a bleeding tooth.

This snail feeds voraciously on sea-weed, and is nocturnal in habit. During the day it may be found resting on rocks near low water. It ranges throughout the West Indies, and to the coast of southern Florida.

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Two-Storied Agaricus

UNDER one of the greenhouse benches on his place at Avery Island, Louisiana, E. A. McIlhenny, whose name is more usually associated with his great haven for migratory waterfowl, found this double-decker *Agaricus* growing. For some strange reason the spawn, having produced one fully developed and excellent specimen, decided to go on with its work and see what else it could do. Instead of devoting its strength to growing into the biggest possible mushroom it elected to make itself into two individuals, one atop the other. When picked for photographing both were in excellent shape. A German student of mycology has written a book of many pages on malformations and other freakish manifestations in his favorite plants. Perhaps this *Agaricus* may be honored with a place in his next edition.

THE ARTIST CATCHES THE SONG SPARROW IN
MANY OF ITS POSES THAT AID TO IDENTIFY IT

ATTITUDES OF BIRDS

The song sparrow's individual characteristics

By EDMUND J. SAWYER

THE trained field observer may come to know his birds "at a glance". Still, species being based largely on distinctions of color, the beginning student must sooner or later check his first identifications on a color basis. Yet, one should not need to depend entirely on color for his clues. It is in terms of height, color of hair and eyes, and so forth, that we first identify or describe a person. But the same person, having become a familiar acquaintance, is recognized by his walk, the way he carries his head and in various other ways.

Since we may readily come to associate traits of action and attitude with species of birds—these points, too, being far more readily noted in the field than "specific characters", owing to the restlessness of birds and the frequency of unfavorable lighting—such traits are deserving of far more prominence. Furthermore the unconventional pose and the characteristic attitude should have great interest in and for themselves. It is certain that many species show in their attitudes and manners as much that is characteristic as they do in their colors, nests, eggs or haunts; many of them, actually more. It is equally true that other species may show little that is diagnostic in their habits of posture. But the same may be said of so-called field marks and colorings by which birds are ordinarily described and identified. For example, the rather striking vertical pose of a singing song sparrow is, after all, only one of this bird's usual attitudes in singing. It sings in various other postures and not infrequently in the rather horizontal one that is more typical of its cousin, the vesper. In such an instance the diagnostic value of the attitude may be compared with that of a field-mark shared by two or more species, as, for instance, white outer tail-feathers.

I know my friend Smith by his walk, his outline, the way he holds a cigar or sharpens a pencil—any one of various things; so, *on sufficient acquaintance,* will you know him. Yet probably neither of us could describe that walk, outline or manner in a way to convey to another a serviceable clue to Smith on sight. Still, possibly an artist might by a few strokes of pencil or pen catch the telling subtleties. If we could have before us frank pictures of Smith or Jones taken without their slightest suspicion, at the seashore, driving with friends, singing, eating, fishing, playing ball, boxing, sailing, dressing, writing, talking to a friend, to a stranger, on a train; surprised, alarmed, pleased, saddened, confident, doubtful, and so forth—might we not, with reason, feel we had a fairly accurate and dependable visualization of Smith or Jones? Consider, too, that in the case of birds they are perfectly natural in all they do; no allowance need be made for possible artificial posing, fashion following.

Although the song sparrow has been divided into some twenty-three sub-species, it is not material for our present purpose to consider this diversity. Attitudes are much the same, usually identical, for a given species, regardless of geographical associations. I vividly remember my first meeting with the dusky song sparrow of the Northwest. Although, as with all the song sparrows, the pattern of markings was recognizable enough, what a strange bird it was in general color! Yet what a perfectly familiar and unchanged old friend in actions and attitudes!

No other sparrow is more versatile in its every-day movements, none more animated and varied in its attitudes. Nor do I recall any other sparrow whose attitudes are so distinctive; not the vesper, swamp, white-throat, fox, chipping, field or Savannah certainly. The tilting of the tail is a feature of many of the bird's attitudes. But this is by no means unique with the song sparrow. On the contrary, it is frequent in the sparrow family; not infrequent with various other song-birds; common among the warblers. It may or may not be accompanied with drooping of the wings. With the song sparrow, however, the habit is unusually frequent and marked in degree.

Our general impression of the bird's usual singing "stance" is probably that of the nearly vertical pose, as illustrated centrally in our plate. Perhaps this is the most frequent single attitude in singing. It is, however, only one of the bird's many song attitudes. Also it is one equally often seen in the brown thrasher and catbird. It is a position far more usual to the singing house wren than to the song sparrow.

There is a distinctive flight-and-song on occasion. What occasion? I am not yet quite certain on the latter point, but believe it is a nuptial habit. I have noticed that these flights seem always to start from the ground and rise gradually usually to a slightly elevated perch at a distance of some forty to sixty or eighty feet. The manner of this flight is altogether different from ordinary; the wings quiver rather than beat, the bird's progress is slow and the direction straight or on a slightly upward curve. Both the flight and the singing that usually accompanies it are such as to suggest a decided state of frenzy or ecstasy in the performer.

In ordinary sustained flight the song sparrow may, on sufficient acquaintance, be known from other birds, even from other sparrows, by a certain long-tailed, small-winged appearance.

The familiar and highly characteristic pumping motion of the tail is usually confined to short flights from one skulking place to another some yards or rods apart. The action appears to imply something of self-consciousness or a spectator. It may be so pronounced that, as it were, the "tail wags the dog"; again, as stated, it may be dispensed with entirely.

THE WEATHERMAN LOOKS UP

By CHARLES FITZHUGH TALMAN

ASTRONOMERS, without making personal voyages through celestial space, weigh the stars, measure their temperatures and submit their gases to chemical analysis. Oceanographers map the bottom of the sea, which they have never visited. Geophysicists have found out a great deal about the interior of our globe without resorting to the method of exploration described by Jules Verne in his "Journey to the Centre of the Earth." One should not, therefore, be surprised to learn that meteorologists are now busily engaged in exploring the atmosphere up to levels hundreds of miles above the highest to which any human being has ever ascended.

In suitably designed balloons men can rise a dozen miles or so above the earth. Up to a height of about twenty miles the air has been rather fully explored in recent years with the aid of balloons that carry no passengers. These include pilot-balloons, which show by their drift the movements of the atmosphere, and sounding-balloons, which make continuous records of temperature, humidity and barometric pressure (the last serving to indicate the altitudes at which the other two elements are registered). Some of the newest sounding-balloons send out reports of conditions aloft by automatic radio.

As long ago as the year 1902 records obtained with sounding-balloons revealed a fact that greatly astonished the scientific world. Everybody knows that the air grows colder and colder as you ascend, but before that year nobody suspected that if you go high enough you will reach a point where the temperature—though far above "absolute zero"—ceases to fall with increase of altitude. The level at which this happens, now called the "tropopause," is from five to eight miles aloft in the temperate zone, considerably higher over the equator and considerably lower over the poles. Moreover, it varies more or less with season and otherwise.

The whole of the atmosphere lying below the tropopause has been named the "troposphere." Above the tropopause lies a region called the "stratosphere," the lower part of which is known from balloon measurements to have a large range of temperature horizontally though not vertically. It averages something like 110 degrees below zero Fahrenheit over equatorial regions and about 20 degrees below zero over polar regions.

Until the year 1923 the vertical uniformity of temperature that begins at the tropopause was supposed to continue indefinitely upward. Then, however, two Englishmen, Lindemann and Dobson, advanced a different view, based on observations of meteors. The luminosity of these bodies indicates a certain density of the air at the levels where they are seen, and this in turn implies a vertical distribution of temperature quite different from what had been assumed. According to the authorities mentioned, there is a region beginning several miles above the highest level ever reached with a sounding-balloon in which the air is as warm as that of a summer day at the earth's surface, or perhaps very much warmer.

WHERE THE STRATOSPHERE WAS DISCOVERED

The balloon house at the Observatory of Trappes, near Paris. It was from records of sounding balloons sent from here that de Bort discovered, in 1902, the existence of the stratosphere

Belief in the existence of this warm climate in the high atmosphere has since been strengthened by the results of observations made by an ingenious acoustic process. Explosions are set off at prearranged hours and the arrival of the sounds at distant places is carefully timed. It appears from these experiments that some of the sound waves travel up to a certain height in the atmosphere and are then deflected back to earth. As the speed of sound increases with an increase of temperature, this deflection would happen if the sound waves encountered a warm layer aloft, as they would thus undergo refraction.

By a method of comparing photographs taken simultaneously from two or more places the actual height and location of any lofty visible phenomenon of the atmosphere can be determined. Such phenomena include the various details of auroral displays, meteors and their trails, and two varieties of cloud occasionally seen far above the level of cirrus, the highest cloud of the tropo-

THE LATEST MYSTERY OF THE STRATOSPHERE

"Mother-of-pearl" or "nacreous" clouds, photographed after sunset in Norway by Professor Carl Stormer. These are believed to be from twelve to eighteen miles above the earth

sphere. The aurora is thus found to occur at various heights ranging all the way from 40 miles to more than 600 miles.

The clouds just mentioned are so high that they reflect sunlight after the general darkness of night has set in. Those of one variety, called, on account of their iridescence, "nacreous," or "mother-of-pearl" clouds, are, according to the measurements thus far obtained, from 12 to 18 miles above the earth. Those of the other kind, called "noctilucent" clouds, are seen shining with a bluish white lustre through summer nights in middle and high latitudes. Nacreous clouds are believed, on account of their optical characteristics, to consist of liquid water droplets, though the temperature where they occur is doubtless far below freezing. Noctilucent clouds may consist of volcanic or cosmical dust, or, according to the latest suggestion, of ice crystals resulting from the condensation of water vapor discharged in volcanic eruptions.

Assuming these high clouds to consist of water and ice, the condensation process producing them implies marked vertical movements of the air, while their observed drift indicates that winds of hurricane speed blow in the lofty regions of the atmosphere. The rapid drifting of meteor trails tells the same story.

The spectroscope yields much information concerning the composition of the atmosphere at various levels. Thus the spectrum of the aurora indicates that up to several hundred miles, at least, the air consists chiefly of nitrogen and oxygen, just as it does at the earth's surface. The spectroscope also reveals the presence of considerable ozone in the air overhead, though there is hardly any in the air we breathe. The latest news of this ozone is that its greatest concentration is found about 14 miles above the earth; much lower than was supposed a few years ago. An important effect of ozone in the air is to cut off a large part of the ultraviolet sunshine that falls upon the outer part of the atmosphere, thus saving us from a degree of sunburn that would probably be deadly.

Last but not least, science is exploring a vast upper story of the atmosphere, called the "ionosphere." This is an electrified region consisting of several more or less distinct layers—one being the Kennelly-Heaviside Layer—by which radio signals are turned back to the earth. The height at which the turning occurs depends upon the wave-length of the signal; long-wave signals being turned back at a lower level than short-wave. By sending signals of different wave-lengths vertically upward and noting the time (always a tiny fraction of a second) they require to be echoed back to the ground it is possible to measure the heights of the different layers. These heights are subject to marked variations. The signals also give an indication of the electrical strength of the layers, which is likewise variable.

Meteorology is looking up nowadays!

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Dr. Waldo Schmitt of the United States National Museum has made several trips to the fascinating Galapagos Islands and in the November issue of Nature Magazine tells us of the varied and interesting life on these islands. This article will be dedicated to the memory of Charles Darwin and his visits to the Galapagos.

Minnie the Moocher

By RONALD L. IVES

Callospermophilus lateralis was too long a name for the scared creature we found in one corner of the geology camp building when we opened it for the summer. "That darned chipmunk" didn't fit very well either, although the little ground squirrel was a pest at times. After several days of leaving pieces of bread, peanuts and candy bars around, she became quite friendly, and by the end of the first week, she had learned to beg for peanuts. When the summer students came, she was christened "Minnie the Moocher", and the name has "stuck" for three summers.

During the first part of June during the first summer that she was a regular, although nonpaying, boarder at University Camp, Minnie had a mate, with whom she quarreled regularly, but in the latter part of the month, her troubles were lessened. He fell into a can of paint and was drowned.

Minnie did not grieve much, and became more and more friendly as the season wore on. During July, she disappeared for three days, then was seen dragging seven little Minnies, one by one, from a nest some place in the woods to a hole under the lodge. For several days after the moving, she was very timid, but soon she was back on the big rock by the doorstep, begging a peanut from each person who passed.

In early August, she learned that a human could crack a peanut much more easily than she could, and often she would get in front of some passer-by with a peanut in her mouth, and squeak at him until he cracked the nut.

The young ones were growing rapidly, but we seldom saw them. Occasionally, one of them would poke its nose out of a crack under the lodge while Minnie was begging, but as soon as Minnie saw it, the nose was soundly smacked, and the young one went back under the lodge.

Minnie never did learn the ins and outs of clothes. A weekend tourist hung up a coat in the lodge, carelessly leaving some peanuts in one pocket. Minnie smelled the peanuts, and, being hungry, gnawed a hole through the leather coat to get them. The tourist was visibly peeved.

Storing away food for winter is an instinctive trait in ground squirrels, and Minnie was no exception. Once we filled her pouches with twelve peanuts in each side. She had trouble walking with such a load, and had to spit most of them out to get under the lodge. She would store as many as two hundred peanuts in a morning. She never stored candy bars, no matter what kind was given her. She would eat about an ounce of candy, then lose all interest in candy bars for a day or so.

During her second season, now as camp pet, not as a tolerated visitor, Minnie found another mate, and during the late summer had five young ones. Although she was not in the least timid about most things, nobody could come near the young ones without getting bitten, and Minnie's teeth were more than half an inch long.

Minnie had a healthy fear of machinery, particularly after she had jumped on a typewriter. Each time she put her weight on a foot, the key under it would go down. After some minutes of terror, she was lifted off the terrible machine, and retreated to cuss it in chipmunk language.

The Nature Picture of the Month

From the several hundred pictures submitted to the Rotogravure Editor by readers of Nature Magazine, the moose picture above has been chosen for special honor and award this month. The photographer is K. D. Swan of Missoula, Montana. In his picture he has captured not only a splendid photograph of the moose but the feel of the early morning, the mist rising from the mountain lake, the stillness broken by the splashing of this great animal as he wades in, belly deep, to feed on submerged water plants. He has caught on the film of the camera the spirit of the unspoiled wilderness where Nature's creatures may live without fear as they were intended to live.

Mr. Swan made this splendid photograph in the Lolo National Forest in northern Idaho. This picture was taken with an Eastman Recomar 33, using Eastman Portrait Pan cut film and without recourse to a filter.

It was with difficulty that a selection was made of four outstanding pictures for use in the Rotogravure Sections in this and the next three issues of Nature Magazine. Photographs must first, of course, be clear and reproduceable, but final weight in selection was placed upon those subjects that represented care, patience and ingenuity on the part of the photographer. Some individuals are, to be sure, more fortunate than others in point of accessibility to good Nature subjects. Nevertheless, a good photograph of a bird in the back yard may be just as difficult to get as a bird of the mountain top. The editors know the problems of the Nature photographer, amateur or professional, and are thus able to realize all that a photograph represents.

Other pictures submitted for the Rotogravure award are published in the center of this section. Another "Nature Picture of the Month" will be presented next month. Entries are now being received for awards covering the issues from next February to May, inclusive.

The Froth-nest of the Mantis

Photographed by Edwin Way Teale

Rapidly increasing in the eastern part of the United States, the praying mantis is introducing itself to more and more people. Unfortunately many of these meetings result fatally for the insect because of its size and somewhat frightening appearance. As a matter of fact, however, so far as is now known, all mantids are entirely useful, helping to keep various insects in control; even the tiny young aid in the constant battle against aphids. Above is pictured the introduced Oriental mantis whose usual adult size is shown in relation to a hand.

In these photographs, however, Mr. Teale is particularly concerned with the reproduction, and was fortunate in observing and picturing the female mantis at work depositing the frothy mass and her eggs. The task required three hours, during which time the mother hung head down, never glancing at her handiwork, and, finally, moving away without a backward look. All the adults die by early autumn, so the fate of the species rests in the wintering eggs.

"The material," Mr. Teale says, "is a gummy fluid that is squeezed like white toothpaste from the tip of the insect's abdomen. Tiny appendages, whirling at high speed, beat it into a froth. As the work advances, the tip of the abdomen moves back and forth in a slow, expanding oval. Two or three minutes after the sticky froth reaches the air it has solidified. In this mass of foam the mantis deposits her eggs. They are so arranged in layers that when the young are hatched they face the two rows of doorways that form the central strip running down the front of the nest.

. . "Looking at the completed nest after a winter of weathering, one notices that this strip is made up of

little plates, or scales, set one above the other like the leaves of a book. In all other parts of the mass the wall is solid. At the time the eggs are laid this belt of exit doors is covered with chalky-white, porous matter that the mantis skims from the top of the froth. It is the thinnest and lightest part of the sticky spray and is easily crumbled and removed. Winter storms gradually remove it and reveal the belt of overlapping layers. Weathering also turns the cocoon from golden brown to dark chocolate, while the horny structure of the layers protecting the eggs becomes tough and resistant even to a razor blade."

In the picture at the left above we see the female mantis in the act of egg deposition. Note the way in which the material of the nest is placed around the twig. At the right, above, the mother has nearly finished her task and is placing the last of the eggs in the nest. Below is the photographer in a Long Island bramble patch, within thirty miles of Times Square, New York, where nearly fifty nests were found in winter and marked.

The three mantis nests above were taken in mid-winter. More than one hundred baby mantids may hatch from a nest. In the center is a complete one, such as is often found on brambles, weeds or small branches close to the ground. At the right is one cut from side to side to show the arrangement of the egg cases within. At the left is an egg mass cut from front to back, showing the "doorways" at the front. Note the arrangement of the layers like the leaves of a book. Between these leaves the hatching insects crawl to freedom. At the left the honey-colored, newborn mantids are emerging from their nest. As they come from the central aisle that runs down the front of the structure each is attached to a silken thread from which it dangles until it wriggles free. A tassel of these white, silky threads remains after all the babies have emerged.

When the baby mantids emerge from the eggs in midsummer they set about hunting food. Their first meals are made from aphids and similar small prey, from which they gradually progress to a diet of larger insects including many garden pests. In the inset a baby mantid poses obligingly on the head of a tack. The relative size of the baby and the tack may be judged in the photograph, which is, of course, enlarged.

Two friends of the gardener meet, a toad and a mantis, who both enjoy a diet of the insect pests every gardener must battle if his plants are to survive. They seem to be taking each other's measure, perhaps for the pest-eating championship. It is possible that the toad may look rather odd and formidable to the mantis, and the picture at the left shows how the mantis looks to the toad.

It is interesting to note how the mantis clings to the stamens of the lily by its delicate "fingers", below the spiked forepaws, which are used independently of the spiked "forearms", with which its prey is held. The slender feet are remarkable for their holding power because each is equipped at the tip with little clinging organs and a tiny hook. A mantis, clinging to the end of a long curtain, will lift the cloth with him if picked up by the thorax, so great is the grasping and holding power of its small feet.

"AT HOME" AT THE SCREECH OWL HOUSE

One of the outstanding pictures submitted in the Rotogravure Contest by F. A. Rogers of Downers Grove, Illinois and selected for special award. Additional pictures are shown on the next two pages.

Colonel William W. Edwards, U. S. A., of Chicago, snapped the picture of the opossum on his native heath in the deep woods of the sand-dune country on the south shore of Lake Michigan. Mildred Adams Fenton of West Liberty, Ohio, "shot" the elusive hoary marmot in Glacier National Park. Henry Charles Suter of Coronado Beach, Florida, caught the bluejay in one of its sauciest poses. Leica, Graflex, Jr., and Kodak cameras, respectively, were used in making these photographs.

A tiny mite amid the immensity of jumbled peaks, this little golden-mantled ground squirrel posed for W. T. McLaughlin of Northwestern University. C. M. Gow, secretary of the Forest and Bird Protection Society of New Zealand, snapped the charming picture at the right to show how protection has won the confidence of the gulls at Paekakariki Beach near Wellington. Below is Nature's birthday cake baked of foam in the vortex of a waterfall, in the Laurentian Mountains of Quebec. It was photographed by G. Harper Hall. Kodak, Graflex and Goerz Ango were used respectively to get these.

Some Mushrooms

If the fairy ring of mushrooms above had made a complete circle it would have been thirty-five feet in diameter. The particular species is *Lepiota morgani,* a non-edible form frequently found growing in this fashion. It has a white cap, from five to ten inches across and covered with yellowish or brown scales. Its gills are free, close and turn from white to green. It has green spores instead of white, differing from other *Lepiota.* Its stem is white, tinged with brown and larger at the base. It is found in damp meadows, pastures and open woods.

At the left is another interesting *Lepiota, L. procera,* popularly known as the parasol mushroom. Its specific name comes from the Latin word meaning tall, and tall it is, often growing to be more than a foot high. Atop the slender stem the cap is brown. It starts by being egg-shaped and later becomes flattened. As shown in the illustration, the brown skin breaks into spot-like scales, revealing the white flesh beneath.

Looking much like an underwater picture in a tropical setting, this picture shows several species of coral mushrooms growing on decaying vegetation. In this group there is no separation into stem and cap, the spores being borne all over the surface of the mushroom. There are many strikingly colored species. Below is an arranged group of the poisonous *Amanita muscaria,* showing development from the button type to one with an eight-inch cap.

Admire but do not eat the mushroom above. It is the so-called Destroying Angel, *Amanita brunnescens.* It is a beautiful, pure white species and a close relative of the Deadly Amanita, also alluring but dangerous. The photograph shows the cup or volva at the base, a distinguishing feature of this mushroom. It is usually found growing alone in open woods in the fall of the year. Below are "The Three Musketeers," growing companionably together. These are three specimens of *Lepiota morgani,* inedible but interesting. These mushroom pictures are all the work of W. Bryant Tyrrell, who recorded the life of the eagle in picture in the July Rotogravure Section.

Late Flowers

Here the artist-photographer has given us a rare treat, a combination of two delightful plants that choose to wait until early autumn for their crowning work. Fringed gentian, that "with quiet eye, looks through its fringes to the sky" when so many of our showiest flowers have tired and gone away. To many it is one of the rarest of our flowers, and, unfortunately, it is also one that has suffered heavily at the hands of false friends.

Gentians are notorious for lateness, while orchids usually make haste to blossom before hot weather is here. But the tribe of ladies' tresses are in no hurry to hoist their spikes of fragrant bells, and so we find them keeping company with the late lingerers. Ladies' tresses, with other orchids, were the special wards of those two great botanists, Darwin and Gray, and many an hour was spent in study, and many a score of letters exchanged, ere these two friends learned the mystery of the reproductive processes of these gems of Nature.

As for yarrow, it is so wide-spread in North America that few suspect that all or nearly all of the plants in our country are descended from immigrants from Europe and Asia. There it has many names, as milfoil (thousand-leaf) and old-mans' pepper. The ancients believed that a healing ointment could be made from its leaves, and its scientific name *(Achillea)* comes from the tradition that the hero of Troy was taught by Centaur to use it in healing his wounded subjects.

Golden-rods they are called by nearly everyone, but some kinds with less of yellow may well be called silver-rods. The one with the broad drooping panicles is *Solidago canadensis*. It is one of wide range, whose yellowing flowers greet us from roadside and field border in late July in the northern part of their habitat, but farther south as late as November. According to its opportunities it varies in height from two to as much as eight feet, often leaning over into the narrow country roads. To those who love only the summer, the advent of the golden-rods gives a feeling of sadness, but is not autumn as beautiful and as natural as summer?

With a different habit of growth, and a creamy color that justifies the name of silver-rod, we have the species called *Solidago bicolor*. The florets come from the leaf-axils, but the separate branches tend to form a crowded cluster rather than a drooping panicle, and thus give the whole plant more of a rod-like appearance than is usual in the group. Of course, these are only two examples of the great tribe of golden-rods.

The Jerusalem artichoke is not an artichoke, and came not from eastern lands. It is merely a native wild sunflower, and the "Jerusalem" part of the name may be derived from the Italian name Girasole. The "artichoke" is the edible tuber that is attached to the roots like a potato.

The tall or giant sunflower, *Helianthus giganteus,* grows in waste places, usually in low ground, from Maine to Louisiana. The case of the sunflower is one where the generic name is a translation of the common name, for it is probable that men called the plant sun-flower ages before they thought of scientific names. The early explorers in our Northeast found the Indians cultivating a species that they had probably obtained from the tribes of the great plains, and had already greatly improved in size. From the stalks of the plant these native Americans obtained a textile fiber; from its flower a yellow dye; and from seeds, food and oil. Other species found in Mexico and southward were used by the native civilizations as mystical symbols and in their religious rites.

Pearly Everlasting is one of the flowers that our grandmothers dried and put on the mantels as ornaments. Though the Everlastings are plain and prim, and show but little latitude in their tinting, there is a beauty in even the plainest that fits their surroundings.

Circium discolor is one of the Plumed Thistles, a group that includes the so-called Scotch Thistle, which is the floral emblem of Scotland. This is now thoroughly naturalized in our country, in fact, much too thoroughly to please the farmers and dairymen who must fight it.

Catastrophe

The scene below records one of those rare examples of good fortune that now and then are a photographer's lot. Frank Hibben made the picture when he came upon the cougar hunt. The dogs had finally cornered the cat but still had much respect for its power and awaited the next move on the part of their quarry. Above, the young cougar surveys the catastrophe, first complacently and then with either anger or dismay.

★ Conservation ★

A section of Nature Magazine devoted each month to the expression of practical opinions on the vital issues affecting our use and abuse of natural resources, including wildlife, and dedicated to the purpose of assisting Americans to play a militant part in the attainment of constructive conservation aims.

ARTHUR NEWTON PACK, *Editor*

THE 1935 ★ WATERFOWL REGULATIONS

IN THE face of appeals for a closed season on waterfowl from conservationists and sportsmen that surpassed in volume, sincerity and logic any similar demonstration we know of, the Department of Agriculture has announced an open season of thirty days duration. This thirty-day season lasts from October 21 to November 19 in the north, and from November 20 to December 19 in the south. The division line is the southern border of New York, Pennsylvania, West Virginia, Ohio, Indiana, Illinois, Missouri, Kansas, Colorado, Utah, Nevada and Oregon. In shooting under this season hunters must not make use of bait or live decoys; shooting is restricted to the hours between 7 A. M. and 4 P. M.; the daily bag limit is ten ducks and four geese, and the possession limit the same; the wood duck, ruddy duck, bufflehead, Ross goose and swans may not be shot. There are a few other minor restrictions.

The elimination of baiting and live decoys represents a real and decidedly important advance. For several years conservationists have been convinced that these practices have been responsible in a great measure for the decided diminution in the supply of waterfowl. The vigorous opposition that has greeted any proposal to eliminate these practices, publicly admitted by the Biological Survey to be detrimental, is sufficient proof of their destructiveness. Had they been forbidden a few years earlier, perhaps a closed season would not now be so necessary; had they been eliminated a year ago, the action would have been greeted with greater enthusiasm. Had the season been closed this year, automatic elimination of baiting and decoys would have resulted.

It may be surmised that the American Nature Association is not altogether satisfied with the present regulations. If our understanding of the waterfowl situation had been such that a compromise measure would be wholly satisfactory, we should not have urged a closed season so strongly, and we still believe that the birds are in such a condition that their restoration to reasonable numbers will await a cessation of killing for at least one year. If a respite of only one year should be given the shooting privileges thereafter would need to be still more drastically reduced. So much for the general aspect of the new seasons. Let us discuss briefly, in the light of facts well-known to all interested conservationists, a few of the statements in the Department release.

The present are called "the most rigid regulations in the history of American wildfowling". Perhaps so, from the standpoint of the hardened duck-killer. But the restrictions are not rigid for those ducks that in their southward flight must pass the boundary of the first thirty-day barrage into another thirty-day zone of persecution. Nor are they rigid in the view of those who fully realize the desperate condition of our waterfowl, and continue to defend "those species which are nearest the danger point of extinction, such as canvasbacks and redheads". Others in the same predicament are the wood duck, ruddy duck, bufflehead duck, Ross goose and the swans, the killing of all of which has already been outlawed. One may ask: why do these birds merit protection any more than do canvasbacks and redheads? They do not, but we believe that the advocates of continued shooting of the latter are the more influential.

The news release reads: "Adoption of a short hunting season with heavy restrictions, says the Biological Survey, was the only alternative to a completely closed season. Though advocated by a considerable body of conservationists, including leading sportsmen and sportsmen's organizations, a closed season was considered ill-advised. Reports from Bureau investigators on the breeding grounds indicated that the needed net annual increase would be insured by a short season with heavy restrictions. Complete prohibition of shooting thus seemed unnecessary, and the Bureau knew that complete prohibition would be difficult to enforce. Loss of public support of the regulations and a breakdown of local enforcement through the cutting off of State operating revenues from the sale of hunting licenses were other obstacles to a closed season. * * * The principles that dictated

the regulations, it is explained, are based on a mathematical progression toward restoration without breaking down existing law-enforcement organizations, either State or Federal, by the imposition of an impossible load."

In earlier official publications of the Biological Survey, we are informed that a large percentage (probably 85 per cent) of North American ducks and geese are raised in Canada, and of these a majority come from the great wilderness north of the area of settlement, agriculture, sport-shooting and drought, a region where virtually primitive conditions prevail. This area covers upwards of two millions of square miles. We would ask how reports from a few investigators from so vast an area indicating "that the needed net annual increase would be insured by a short season with heavy restrictions" could be assembled prior to August first. This would involve the gathering of the data at a time when the majority of North America's young waterfowl are not yet on the wing. Frankly, we have no faith in "mathematical progression" principles that must be deduced from suppositious data. The figures of even the kill, which could be ascertained with reasonable accuracy if the killers chose to give it, are mere wild estimates, put out with apologies because they must be compiled from sources admittedly inaccurate. "The guess of one person is just about as good as that of another", say the compilers of such figures. But we are willing to accept the final conclusion of the Bureau, made public earlier in the summer, following a discussion of kills and other losses: "The fact remains, however, that all of these causes of loss, including the legal bag of the sportsman, have been sufficient to continue the progressive decrease of our stock of birds."

It is admitted by the Bureau that for thirty-five years we have been killing more ducks than were hatched. We fear that the present regulations will make it thirty-six years. For we are convinced that nothing short of a cessation of killing for a longer or shorter period will suffice to restore a resource so depleted. Certainly, continued killing while efforts are made to improve a very small percentage of North America's breeding grounds will not do the job. The problem is continental, not a local one.

We believe that history will prove our stand to have been the right one. We only regret that our resources in waterfowl must be sacrificed in making that history.

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CONSERVATION STAND FAVORED BY THE PRESS

Although the subject of extended hearing and much discussion, the Conservation and Works Bill, that some believe would pave the way for the transferring of bureaus having to do with conservation to the Department of the Interior, was passed over at the recent session of Congress. This is well. Issues of vital conservation significance are involved, and this measure does not represent a solution.

Our stand, in which, briefly, we declared for a distinct separation of the administration of inorganic and organic natural resources, and the grouping and coordination of the work concerned with the latter under one head—most logically in the Department of Agriculture met with interesting editorial response in the press of the country. We quote some of these comments because we believe that their character and extent reflect the importance of this question.

Describing our proposal as "a common-sense suggestion", the *Atlanta Journal* declares that while "the present arrangement of government bureaus is decidedly haphazard, a plan to reclassify them that neglects the fundamental difference between engineering (with which the Department of the Interior has chiefly to do) and agriculture is likely to result in far greater confusion than ever". An editorial in the Scripps-Howard newspapers commends our view saying: "Let us, by all means, reshuffle the conservation cards. And, perhaps, out of it we can get a new deal for ourselves and posterity."

The *St. Paul Pioneer Press* approves the idea "in the light of the extreme illogic of the present set-up" and says that "the proposed bill to lump public works with conservation would only add more confusion." Declaring that "Mr. Pack's proposal seems worth considering", the *Christian Science Monitor* observes that "the Department of Agriculture might find itself functioning better with hands freed to protect renewable resources." The *Louisville Times* asserts that "such a department would have enough work without supervising works", and the *Kalamazoo Gazette* confesses that "it is certainly not easy to understand why the federal government's conservation activities should not be centralized under one departmental authority instead of being spread out among three."

"Most citizens will probably agree that all conservation efforts should be grouped under the general direction of one Cabinet official," says the *Altoona Tribune*. "As a matter of fact there is so much to do in conservation in the country that it might not be difficult to envision the setting up of a separate Cabinet post for the work."

In some quarters our suggestions were interpreted as urging such a new department, and, in fact, the only adverse comment on our proposal was from an editor of two who recoiled from another department. Certainly we seek no addition to present bureaucracy. All that we ask is logical coordination of all activities concerned with our renewable natural resources in one place. So grouped, one hand can know and reckon with what the other hand is doing. Logic and efficiency seem to point the way and the future of conservation demands we follow it.

What Price . . . Fish?

By ALEXANDER SPRUNT, JR.

FISHES form the diet of a surprising number of birds. This tendency, in some parts of the world, has been put to very practical use by man, as witness the custom, widely prevalent in the Orient, of the employment of cormorants trained to fish for their owners. Chinese and Japanese fishermen have flocks of these birds that actually fish on leash and are prevented from swallowing their catch by means of a ring about the neck. However, this more than tolerant attitude on the part of Orientals does not find a parallel in this country and certain of our own fish-eating birds for a long while have been accused of serious depredations upon those finny species that man has chosen as his own particular property.

That the taking of fish by birds is their natural right makes no difference whatever. The spirit of fair play and reason seems too often to have given place to personal selfishness in the mind of man toward the lower animals. It seems that nothing in the world has any rights except man, and that his are always to be considered first.

Bitter accusation is periodically brought against such of our birds as the white and brown pelicans, the belted kingfisher, the osprey, nearly, if not quite all of the herons and even that dainty sprite of our western canyons, the water ousel! Gulls, terns and skimmers have come into this galaxy of "criminals" also, but one finds amazing omissions and discrepancies in these attacks. The writer does not wish to add names to the list, but one is bound to wonder why some of these birds are so persistently attacked and others, of a nature fully as piscatorially inclined, are never mentioned. It is only another indication of the singular inconsistency that usually characterizes such criticism.

Statistics are often boring and perhaps unconvincing, but accurate figures do tell a story. Only by the result of actual investigation can charges be proved or disproved, and it should be with birds as it is with man when he is on trial. Therefore, in the interests of fairness and justice, let us consider a few facts about some of the accused in this matter of destroying food fish. Generalities are always misleading, but it seems that those who attack the fish-eating birds always deal in generalities and seldom in specific facts.

Specifically, then, what of the pelicans? There are two species of these most interesting birds in the United States, the white pelican, *Pelecanus erythrorhynchos,* and the brown pelican, *P. occidentalis.* A geographical race of the latter occurs on the Pacific Coast and is known as *P. o. californicus.* The white pelican occurs mainly as an inland bird during the nesting season, breeding in the Rocky Mountain area and wintering on the Gulf Coast and southward. The brown pelican is an Atlantic Coast bird, occurring also very numerously along the shores of the Gulf of Mexico. It is the commoner of the two.

PHOTOGRAPH BY SIGFRID LARSON

THE BROWN PELICAN

Against this bird many of the attackers of fish-eating birds level unjust and untrue accusations

Both of these birds have come under the ban on many occasions. Of the two the white takes larger fish, and, in some places and under certain conditions, can no doubt destroy a good many. Never diving for its prey as does its brown relative, it can and does scoop up fish from lakes, streams and ponds in its range and in so doing undoubtedly gathers in some species that man prizes. At the same time, the *majority* of fish taken are *not* acceptable to man as food. In addition to its diet of fish is an item that its enemies never mention, for the white pelican often indulges in insects! In addition to these, salamanders, tadpoles and crawfish are taken. But locusts, so often a curse in the West, are specimens of their insect food and surely this should count for something. The fishes taken are mainly carp and suckers, neither of which are acceptable to man. In an investigation carried on some years ago in California as to the sources of *all* fish destruction in that state, it was found that the white pelican was responsible for .001 percent!

Not only are wide generalities employed in the campaigns against this fine bird, but absolutely erroneous statements are brought forth as arguments. An example is an Associated Press report on the action of the State of Montana in deciding to appeal to sportsmen to kill pelicans because of their inroads on food fish. It was said that "the birds not only eat fish for food and store others for short times in their beaks, but kill fish for the pure love of killing". There is not an atom of truth in the last two clauses, and any ornithologist knows that pelicans neither store fish in their beaks at all, nor kill for the joy of it.

In the case of the brown pelican there are facts in plenty to show its real status as a fish-eater. This, it certainly is, but little is said about the kinds of fish taken except as errors. Whatever doubt may be felt as to the white pelican taking trout, no doubt at all attaches to the bill of fare of the brown species. In Florida, Louisiana and Texas, this bird has been the mark of determined attacks on the ground that it takes huge numbers of food fish. While an individual may occasionally capture a weak-fish, whiting or croaker, its normal, every-day menu consists of fish never taken by man and considered by him of no account at all. This is not guesswork but actual fact.

It may be recalled that, when the meat shortage occurred during the World War, the Government called on the people to "eat more fish". At once the cry went up from scores of fishermen and dealers that the pelicans along the Gulf Coast were doing away with so many food fish that they (the dealers) were unable to get many, and that the extermination of the pelican was imperative if we were to have any fish left for either food or sport.

Investigations by the U. S. Biological Survey, State Conservation Departments, heads of national societies and independent museums resulted. The Louisiana coast from Pearl River on the east to the Sabine River on the west was covered and pelicans taken and their nesting colonies critically examined. The remains of fish from the latter, together with the stomach contents of collected pelicans were analyzed by the U. S. Department of Fisheries. The result showed that 97 percent of the fish taken by pelicans were menhaden and 3 percent were silversides. Not a single "food" fish was found!

The Florida data, while not as convincing as the Louisiana survey, are highly illuminative. In a nesting colony of 2000 birds on Pelican Island, an agent of the Biological Survey found that menhaden formed 90 percent of the food; other fishes of little or no commercial value 7 percent, and edible species (food fish) comprised 1.3 percent.

On Indian Key, Tampa Bay, 1276 fish were picked up in a pelican colony. Of these, 39 were food fish; all the others were menhaden and thread herring.

Dr. T. Gilbert Pearson, then President of the National Association of Audubon Societies, carried on extensive investigations in the southern Florida pelican colonies. Of the 3428 specimens of fish collected in the colonies, 27 were of kinds sold in the markets but of this 27 not one was a trout, mackerel, pompano or other fish so prized as they are.

Not content with the sea-birds, the attackers diverge at times to the belted kingfisher, accusing it sweepingly. The Biological Survey examined 313 stomachs of this species and found that three-fourths of the food contained had been taken under natural conditions, that is, *away* from fish hatcheries! Less than half the fish taken were edible, some were carp, sunfish, killifish, stickle-backs and sculpins. Crawfish formed 16 percent of the total food, frogs more than 5 percent and water-beetles 4 percent. A kingfisher about a hatchery will certainly take some trout fry, but to condemn the whole tribe because of the depredations of a few individuals is as foolish as it is unfair. The great majority of the kingfishers in this country were never within miles of a fish hatchery.

What is true of the kingfisher is also true of the herons. Some may do damage about hatcheries, but the vast majority live in sections where there are none. Many of the fish taken by herons are, themselves, known enemies of trout fry. Here, indeed, is something that the vilifiers of the fish-eating birds either do not know, or at least never mention. It is certainly to be wondered what becomes of the enormous numbers of fish "planted" in the streams of this country. They undoubtedly disappear and the blame for this is usually placed at once on birds, but much of it really should be placed on *other fish,* those predatory species that are as fond of fry as any bird, and which eat them continually. It is certainly the case that predatory fish consume far more fry than does the water ousel for instance. That one could seriously charge this delightful creature with being a detriment to the sport of fishing is almost inconceivable, but it is done nevertheless.

Ospreys are fish-eaters, but the fish they take are but rarely those of a marketable kind; cormorants take fish as do the anhingas and many of the ducks, but they are minnows, sunfish, carp and many others that man scorns as food or for sport. The sum of it all is simply that there are two sides to every question, but we hear too much of only one. Some birds eat fish which man catches as food, but they are greatly in the minority. Reasonable control of these by those competent to undertake it is logical and right, but the unreasonable and unreasoning attacks upon fish-eating birds in general are by no means fair or right and have no place in true conservation.

Last, but never least, MAN himself is the greatest destroyer of fish as he is the destroyer of all natural life. Instead of recognizing this fact, man proceeds to blame innocent sources because there are fewer fish for him to catch. What a commentary on the selfishness of the "lord of creation"!

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The fish and game laws of the State of New York provide that "any person over the age of twenty-one years who is the holder of a valid hunting, trapping and fishing license, may, and it shall be the duty of the game protector or other peace officer to, humanely destroy a cat at large found hunting or killing any bird protected by law, or with a dead bird of any species protected by law within its possession; and no action for damages shall be maintained for such killing." It would be interesting to know how many New York State hunting licenses are taken out under this regulation for the protection instead of the destruction of bird life.

LAND USE PLANNING

By ARTHUR NEWTON PACK

"IN THE CANYON BEHIND OUR RANCH THERE IS A DEER."

IN THE canyon behind our ranch there is a deer which, fortunately, does not realize all the conflict it is causing. The forest ranger is charged to look after it, he predatory animal killer of the Biological Survey is supposed to protect it, the state game warden hires another man to do the same thing, and also claims the exclusive right to give anyone permission to shoot that deer.

When winter comes, our deer will slip down to the public range. Thus far he has had two bureaus of the Department of Agriculture and one state organization fighting over him, but now he trots into the realm of the Department of the Interior, where the Division of Grazing will determine whether there is to be any grass or browse left over for our deer from the domestic sheep and cattle which it attempts to regulate. You and I, as citizens, are paying for all that regulation and for all the inter-departmental squabbling to boot. The deer gets a mighty small portion of the benefit.

We have heard a great deal about Land Use Planning. That high-sounding term may mean nothing but political balderdash. It may mean the attempt of some none too practical economic theorists to meddle with a maze of history, circumstance, and hard facts which, although capable of being resolved on paper into Utopian idealism, refuses to yield in fact without much hard, honest, practical delving. For the stated purpose of planning land use in the public interest we now have, centered in Washington, a National Resources Committee which has been instructed by the President to get to work and develop a cure for all land-use problems.

This National Resources Committee is confronted by a superman's task. On the one hand, it has arrayed against it the force of American individualism—the sentiment that makes the toiling farmer unwilling to leave his "submarginal" home for any glittering Governmental promises of a new start and a new deal; and on the other hand it confronts the equally strong ambitions of various existing Government land departments and bureaus which propose to yield nothing of the power and authority over public lands and public resources they have long possessed. Bureaucratic power and authority mean money to spend, money means salaries and jobs, which in turn lead to votes and Congressional support to be used against any practical readjustment of bureaucratic functions.

The promulgators of the National Resources Committee realized that one small body of men could not, unaided, solve so vast a problem. Accordingly each separate state was asked to create a State Planning Board to recommend plans for its home state. Provisions were made also for county planning boards and city planning boards to meet more purely local problems. So vast are the local complications, so involved the whole question, and so far removed are the various subsidiary boards from any real authority that in most instances the goal will take years to achieve. That is the whole trouble with high-sounding, highly theoretical schemes. They get shunted off on side tracks and are forgotten.

To us, however, it seems there are a few broad elementary principles of land use planning that must somehow be solved first. These are the problems of managing Federally owned lands and state owned lands; for, if neither Uncle Sam nor the individual states can set their own houses in order, how will it ever be possible to exercise any of this theoretically perfect control over the private individual? Governmental tangles are only too easy to find. As already pointed out in these columns, why should the Bureau of Education attempt to manage reindeer while the Biological Survey claims all the rest of the deer tribe? Why should the Forest Service claim to manage all game animals and wild life on the National Forests while the game commissions of the various states in which the National Forests are located claim the same prerogatives and at the same time a so-called Game Management Division of the Biological Survey bases its excuse for existence upon practically identical grounds?

All over the Southwest the sad story of Governmental duplication and bungling in land use management is clearly represented on every side. The Land Use Committee of the New Mexico State Planning Board can take up almost none of the important questions confronting it without running squarely into:

The United States Forest Service
—Department of Agriculture

The Bureau of Indian Affairs
—Department of the Interior

The United States Biological Survey
—Department of Agriculture
The Bureau of Reclamation
—Department of the Interior
The Grazing Administration
—Department of the Interior
The Sub-Marginal Farm Authority —Independent
The Bureau of Fisheries —Department of Commerce
The State Lands Department —State of New Mexico
The State Game Commission —State of New Mexico

New Mexico has pioneered in local cooperation. Its Land Use Committee of practical business men and conservationists gets all the representatives of those Government bureaus together and threshes out a plan. The local representatives of all those various Federal authorities get along splendidly. But alas, to bureau heads sitting in Washington no such practical scheme seems to appeal. Perhaps it is too simple and direct. Responsible each to different authority, the red tape of officialdom and the selfishness of bureaucrats continue to overwhelm the public interest. Too many cooks spoil the pie.

But there is one hopeful sign upon the horizon. Such organizations as the New Mexico Land Use Committee, which studies these problems, and whose practically experienced members give their own time without salary, are beginning to see what the eventual solution must be. Land Use Management is a fundamental plank of good government. Land Use for trees, crops, domestic stock, wild game and fish, and the subsidiary but no less important uses of recreation all pertain to agriculture. So far as Federal ownership or Federal participation is concerned, all such Federal administration must be centered in a single authority well grounded in all phases of agriculture, and independent of any conflicting interest or internal petty jealousies and strife, which now abound among the Government departments. Such an authority requires clear-sighted leadership as non-political as possible. If a centralized authority along these lines could be attained, land use planning and proper economical administration of public lands would result. Until such centralization is achieved, we believe that chaos will continue. In no other way can Uncle Sam set his own "land planning" house in order.

At the same time it might be well to suggest that centralization of Federal authority as regards land use alone cannot be expected to bring about altogether practical results. We have always felt that conservation must necessarily be a regional problem, supported largely by regional public sentiment, but in any case controlled within reasonable measure by those who are thoroughly familiar with the regional or local situation. The weakness of Federal administration in the United States is the fact that no man at a Washington desk can cope with national problems successfully. What is needed is the principle already made clear in connection with the New Mexico Land Use Committee and a few other similar groups—namely, provision for originating or reviewing, for purposes of recommendation only, all Federal land management plans applicable to any particular region by a non-political regional land planning board made up of competent representative citizens of each region or state. On such a board there should be no undue influence by any one business, profession or group. An agency of this kind would also have the important task of coordinating the always controversial functions of Federal and state authority, and preserving true conservation accordling to the principles of democracy.

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KILLING FOR FUN ★

When one who has been a hard hunter all his life asserts "I yield to no one as a conservationist," he is merely being totally ridiculous. Such statements as "the best friends of wild animals are those who shoot them" not only involve a hopeless contradiction of terms but are entirely untrue. The only shred of justification they have is the plea that sportsmen's license fees support the state game departments and that these organizations are devoted to conservation. Fees and the ends for which they are expended are, however, only details of what has well been called a legalized system of extermination, for, as the results clearly show, it is not conservation, except locally and sporadically. The long continued general decrease in wildlife is known, if not admitted, by all. On what pretense can friendship for wildlife be claimed when, through the efforts of those "friends", wildlife has steadily been diminished in every generation?

Sportsmen attempt to deride the genuine conservationists by calling them sentimentalists, but there is no sentimentalism more maudlin than their own when they assert that they love what they kill. The lack of humor that permits them to make such remarks may be epitomized in the following toast:

"The gamest bird I ever shot,
The most toothsome morsel I ever ate,
My friend! the bobwhite."

Good taste certainly forbids the use of the word friend in such connections, but whether friends or enemies, wild creatures are fellow animate beings just as much entitled to "life, liberty, and the pursuit of happiness" as we are.

In achieving these objectives, wild creatures themselves often kill, but as a general rule it is under spur of necessity.

Man alone makes a practice of killing wantonly. With all the advantages his superior mental equipment has brought him, he remains the most inexcusably savage of all living things. The form of savagery known as sport becomes intensified in proportion to the state of so-called civilization attained. Civilization, however, will never deserve its name until it realizes and acts upon the principle that killing for fun is not a legitimate activity of a civilized being.

BAY STATE BILLBOARDS

Legislature rejects move of industry and Governor to ruin landscape

MANY times politics and personal political power have been used for selfish ends at the expense of the public welfare and in defiance of its wishes. One of the most glaring examples has recently been provided in Massachusetts, where the billboard interests, thwarted by a Supreme Court decision against them, turned to the Legislature in an attempt to regain the ground they had lost. Aided by the Governor, James Michael Curley, and some of his henchmen in office, the industry was defeated only after a hard legislative battle.

When the Supreme Court of Massachusetts handed down its decision, early this year, it sustained the right of the State by regulation, and the cities and towns by ordinance, to control the erection of billboards in such a way that motoring in rural Massachusetts would be pleasurable and safer. The court asserted that the billboard industry was "not exercising a natural right" in ruining the rural landscape. It affirmed "the right of the traveler upon the highways to a peaceful and unannoyed journey". It declared that "considerations of taste and fitness" were vital and proper factors in controlling the industry.

This decision was popular. While many citizens had been vocal in their opposition to the billboards, others, who had felt the billboards an inevitable evil that they had to accept, were aroused by the decision to an active support of the State regulations. Even while the law was tied up in the courts, the Massachusetts Department of Public Works, through Mr. Dwyer, who was in charge of billboard control, had accomplished much in improving the rural landscape. The State's sign patrol had eliminated practically all illegal snipe signs on trees, poles and fences, and had cleaned up sign-plastered barns.

Running, as usual, counter to public sentiment, the billboard industry set about to get back in the saddle. They first proposed a commission to revise the billboard law. It was abandoned in favor of immediate legislation in its favor. The industry counted upon the cooperation of Governor Curley, whose daughter was then engaged to and has since married Edward Donnelly, Jr., head of the Donnelly Billboard Company, the largest in New England. The Attorney General of the State is conveniently related by marriage to the billboard industry. Further to help things along Governor Curley appointed, as Chief Commissioner of Public Works, a man with billboard affiliations. He promptly removed the efficient Mr. Dwyer and named another man from the ranks of the billboard industry in his stead.

Thus the State administration was ready to deliver the rural countryside of Massachusetts back to the billboard industry. A bill was introduced revising the law, cutting the permit fee, eliminating the present requirement for set-backs from the highway and from curves and intersections, removing all limit on size, and taking all rights from the cities and towns.

The proposed measure was cloaked in respectability under the guise of restricting billboards to "business districts". It went on to define these as any places where buildings are used for business purposes or where the predominating character is business. In rural districts billboards were to be permitted "where there are two or more buildings within reasonable proximity to one another actually used for, devoted to, or constructed for business". "Reasonable proximity"; how many billboards may go in and how far along the road they may extend was left to the Director appointed under the law. This official is now appointed from the billboard industry.

What the bill actually permitted was virtually unlimited erection of billboards. Any hot dog stand, filling station or farmer's produce stand became a business district. The billboard industry would have only to put up a shack or two, tack a couple of signs on it and close

IS THIS A "BUSINESS DISTRICT"?
Under the provision of the law the billboard industry sought to provide that in Massachusetts such a place would have billboards

it up. They would have a "business district". It would still have been "constructed for business", even though some mythical proprietor would be said to have decided that it was not a good site after all. The bars, in other words, were let down.

The people of Massachusetts rallied against this measure through the Massachusetts Billboard Law Defense Committee, which had fought and won the fight for the original law in the court. In the midst of the defense against this latest billboard threat, the Committee found Samuel Hoar, eminent attorney who had represented the committee during the long court battle, climbing over the fence.

A battle was made against the measure before the House Mercantile Affairs Committee, which finally brought out a favorable report for a slightly amended bill from which none of its dangerous provisions had been removed. The measure then went to the House Ways and Means Committee, fortunately made up of the best men in this branch of the Legislature. Hearing before this committee revealed Mr. Hoar definitely on the other side of the fence representing the billboard industry in support of the measure. Fighting the public's battles is, of course, always less lucrative than being counsel for corporations with ample funds for lawyers.

Despite activity of the billboard industry and its friends in the Curley administration, the adverse report of the Ways and Means Committee was accepted by a vote of 214 to 79. A motion to reconsider failed to prevail.

Undaunted by these rebuffs, the Governor sent a special message asking the revival of the bill and its return to the committee. This was done and an amended but really unchanged bill emerged. The fight was transferred to the State Senate, which, in turn, rejected the measure. Finally, faced with defeat on a motion to reconsider the rejection, Governor Curley gave up, saying that he would take care of selling out the Massachusetts landscape by cancelling the present rules and regulations of the State Department of Public Works and substituting new ones.

The experience of Massachusetts is cited in this detail to show the methods employed by the billboard industry to gain its ends. It is printed to demonstrate again the utter disregard of the industry for public safety on, and enjoyment of, the highways that the people themselves have built at a great expense and along which billboards are parasitic growths unjustified in any way.

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The Massachusetts Billboard Law has now become a matter of national concern. It involves vital fundamentals of interest to everyone in every state interested in preventing further desecration of the rural landscape by parasitic industry. It has become a national issue by virtue of the appeal of the billboard industry to the Supreme Court of the United States from the decision of the Massachusetts Supreme Court. This case must be defended. In Massachusetts there has been constituted, for several years, the Massachusetts Billboard Law Defense Committee. This body has fought the fight in defense of the law, its officers serving without pay and the cost of litigation being borne by contributions. Funds are now needed to carry the defense to the highest court. Such contributions will be in support of a cause that should concern all intelligent Americans. They may be made to Sydney M. Williams, Treasurer, Massachusetts Billboard Law Defense Committee, 3 Joy Street, Boston, Massachusetts.

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Thirty thousand acres have been set aside in the George Washington National Forest, Virginia, as a Federal Game Refuge by proclamation of the President. The area will be known as the Big Levels Game Refuge. No further hunting or fishing will be allowed except under such rules and regulations as may be prescribed from time to time by the Secretary of Agriculture. It is planned to control the wildlife on a "sustained yield" basis and as a permanent resource.

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Stricter enforcement of regulations against hunting and other activity in behalf of wildlife protection is credited to the Civilian Conservation Corps by the National Park Service in a report to the director of the Corps, Robert Fechner. Fenced-in mammal sanctuaries, lookout towers to detect poachers on National Park areas, construction of nesting islands in Yellowstone Lake for the rare trumpeter swan are among the items on the credit side. There is no doubt that the Corps has, in many places, aided wildlife. Unfortunately there have been entries on the debit side through over-zealous clearing of regions suited for ground-nesting birds, opening up of roads and trails in regions much better left undisturbed, and ill-advised poisoning campaigns against so-called predators. These are, of course, less the fault of the Corps than they are the fault of the agencies for whom the Corps units happened to be working at the time.

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Discovery of new haunts of the rare ivory-billed woodpeckers in two places in the South is reported by the National Association of Audubon Societies. Very properly the location of these birds is being kept secret.

BUT WHO PAYS?

By TOM GILL

Forester of the Charles Lathrop Pack Forestry Trust

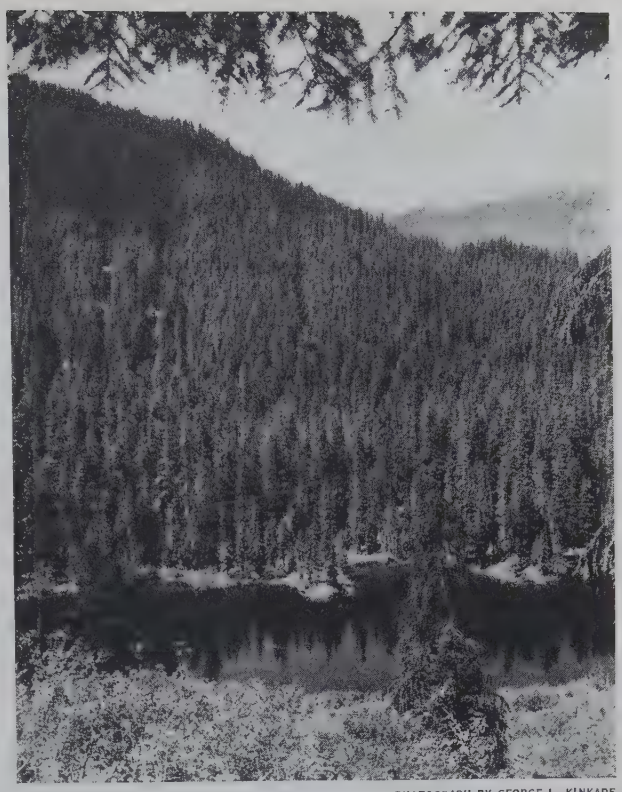
ANOTHER row is on between the Forest Service and the Park Service.

It is not the first, and there is no reason to suspect that it will be the last, for the two Services belong in Departments that have been at historical loggerheads ever since the Forest Service, in the interests of conservation, was removed from the Interior Department and placed in the Department of Agriculture.

The present row has to do with a proposal to take from the Forest Service portions of the National Forest land and put them under the jurisdiction of the Park Service. In Washington a movement is afoot to establish a Mount Olympus National Park which will whittle away about 188,000 acres from the adjacent National Forest, together with 5,000,000,000 feet of timber. In California the plan is to create a National Park to be known as the King's Canyon National Park, and take from the Forest Service the sizable sum of 645,000 acres.

We are supporters both of our National Park system and of our National Forests, and accordingly we are not so much interested here with the merit of these particular quarrels as we are with the effect of this endless internecine warfare between two Federal Departments. For years the Forest Service has been kept in a state of chronic irritation because of this process of sniping off its National Forest lands to enlarge the National Parks. It has militated against good administration, since forests no less than politics and business require organization, and to properly administer these lands the Forest Service spends the great bulk of its appropriated money on roads, trails, telephone lines, and ranger stations. All this is lost if once these lands pass under the jurisdiction of the National Parks.

Now this difference in ownership between Tweedledum and Tweedledee has very little importance for the average citizen, but to the communities that depend on National Forests for their forest products or for grazing, these changes are of very vital importance. For example, the Forest Service is building up its territories into "sustained yield" units—areas in which the amount of timber cut each year is matched by annual growth. Since there is no reduction in the capital stock of the forest itself, the forest officials may say to a certain community, "We have enough timber here to support your mill for all time. We can also support so many head of your cattle." So, in response to what virtually amounts to a Federal guarantee, the community comes to depend on the National Forest for its economic existence. But what happens if a sizable slice of this area is placed within a National Park? All grazing and timber cutting are discontinued. The community must look elsewhere for its logs and grass, or the Forest Service must find some other means of providing them. In either event there is confusion, a breaking down of long-term plans, together with unrest and dissatisfaction in the community itself.



PHOTOGRAPH BY GEORGE L. KINKADE

ELK LAKE ON THE OLYMPIC PENINSULA AS SEEN FROM THE HOH-GLACIER CREEK TRAIL

Why is it necessary? *If it is for the greatest good to the greatest number to keep a certain area in its primitive condition, why ought not that be the policy, whether the land is in National Forests or National Parks?* As a matter of fact, there is grave question whether we should need any Mount Olympus National Park, or any King's Canyon National Park *if* we could be assured of a management policy on the part of the Forest Service that would give proper emphasis to recreational and wilderness areas.

In place of this ever-recurrent strife, have we not a right to demand coordination between these two Services that would end forever this sorry spectacle of two branches of the same Government spending time, effort and money in a bitter struggle against each other? So long as these two great conservation agencies remain in hostile camps, we are trying to drive two horses that refuse to go in the same direction—each one pulls for his own stable, and the goal is lost sight of. If both agencies were under one head, our Federal forest lands would get the benefit of both points of view, the Forest Service might learn a little more about big-scale recreational planning, and the Park Service a little more about multiple use—that form of management by which all the varied resources of an acre can be made to serve their highest usefulness.

The whole difficulty arises from the fact that National Parks have been viewed solely from the National Park standpoint by one Department of the Government, and

National Forests have been planned from an almost equally non-inclusive viewpoint by another. The two must be merged. The way out is to gather under one administrative head all those agencies having to do with the renewable resources of this country and place them in the one Department that has treated our living resources as biological problems—the Department of Agriculture. Such a fusion would put an end to the time-wasting effort of both Services to out-maneuver the other—effort that from the taxpayer's standpoint might be used much more effectively in forwarding the cause of conservation.

For in the last analysis it is the taxpayer who is paying for a struggle in which he has no interest other than the very natural interest of deploring wastage of Governmental funds, overlapping activities, red tape, and the petty inter-Departmental jealousies that have militated so long against the efficiency he has a right to expect. John Doe, as usual, holds the sack.

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The American Wild Life Institute

THE American Wild Life Institute, created "to coordinate the forces working in the interest of bringing back to the United States, as well as to Canada and Mexico, some of the abundant wild life which once existed", was organized in the office of Walter P. Chrysler, automobile executive and sportsman, in New York, on August 14. The president is Thomas H. Beck, head of the Crowell Publishing Company, State Fish and Game Commissioner of Connecticut and chairman of the President's Committee on Wild Life Restoration in 1934. Other officers named are Charles S. McVeigh, vice-president; Walter P. Chrysler, chairman of the board of trustees; Powel Crosley, Jr., chairman of the executive committee. Temporary national headquarters are to be in Mr. Beck's offices in New York, with central offices in Washington, D. C., contemplated. Following a second meeting, it was announced that the American Game Association had merged with the Institute and that its president, Seth Gordon, is to be secretary to the new organization.

The announcements say that the Institute will work in close co-operation with the Bureau of Biological Survey, and a list of the regional directors selected to work in each of the nine districts into which the United States has been divided by the Survey is given. Since we believe that some of the appointments are tentative we will refrain from listing or discussing these officers as well as the board of trustees, twenty in number. We should note, however, that these officers, regional directors and trustees include leading sportsmen, publishers and representatives of arms, ammunition, powder and fishing-tackle interests, the Camp Fire Club and the National Association of Audubon Societies.

According to statements ascribed to Mr. Beck, the objectives of the Institute are to seek a membership of ten million, to raise money, complete surveys and promote legislation.

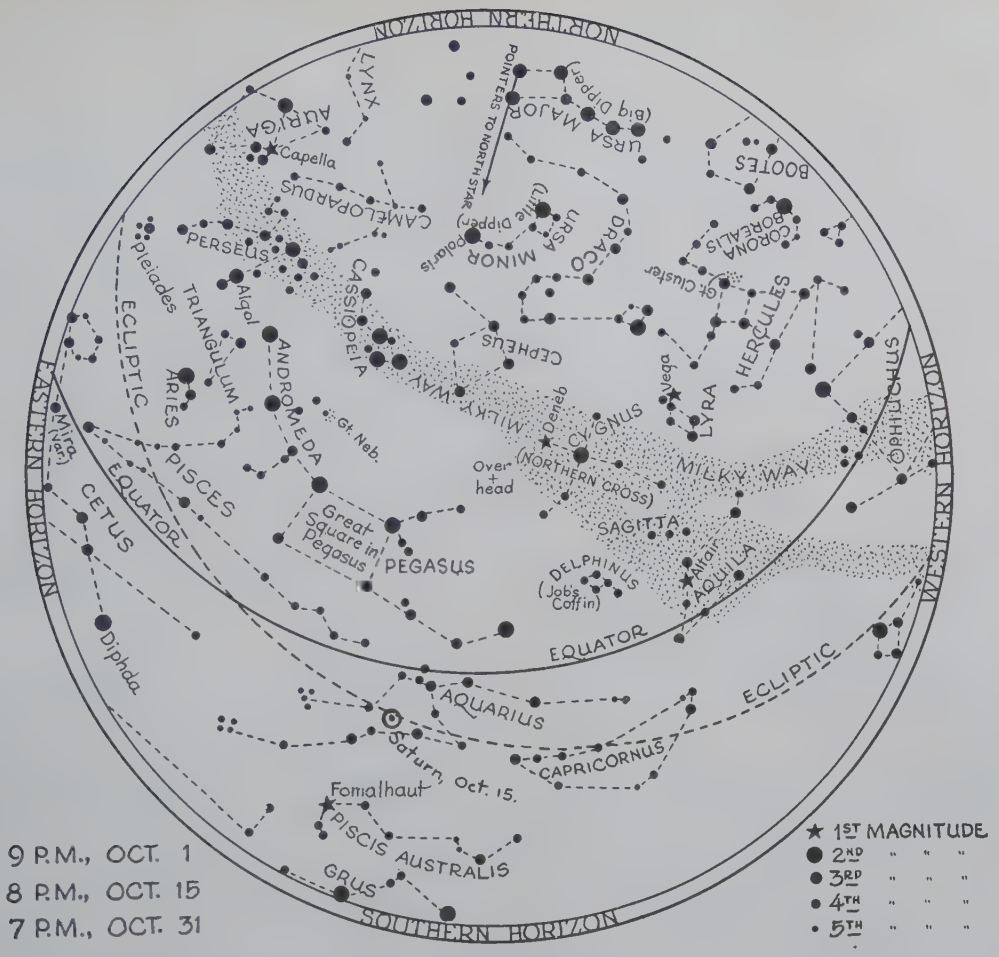
"Each regional director will attempt to build up a large membership in his territory, which will supply funds and political pressure for the enactment of laws to advance the movement of wild life restoration," the newspaper story says.

"Conservation has not been effective," Mr. Beck is quoted as saying. "What we need is restoration. Formerly one could hunt and fish 365 days in the year. Now it is limited to thirty or sixty days. The time limit has been decreasing, and the bag has been getting smaller and smaller. But so have the mammals and birds. Conservation isn't enough."

The American Nature Association gathers that by conservation the Institute refers only to restriction of hunting privileges. But we would point out that restoration requires the building up of breeding stock, and that it has been, and continues to be, impeded by those of its proponents who are unwilling to practice a degree of self-restraint sufficient to spare the most vital element needed in its own program. Our wild life is now suffering from an over-supply of political pressure used in promoting legislation purporting to conserve and restore, but which naturally has had the opposite effect. Yet the marshalling of further political pressure of the same nature is sought.

To our mind, intent on the well-being of a resource that is fast vanishing from our country-side, the victims of greed, selfishness, avarice and vanity, in addition to those ills that are inherent in the intensive occupation of the country, it is inconceivable that any important proportion of our people can be made to believe that the ends sought can be achieved by the means indicated.

How can anyone think that wild life can be restored by the mere spending of money? What wild life needs is not legislation fostered by political pressure, but mercy, tolerance and justice. If we could learn of an Institute to further such attitudes we should rejoice. This present one holds no such hope.



To use this map hold it before you in a vertical position and turn it until the direction of the compass that you wish to face is at the bottom. Then below the center of the map, which is the point overhead, will be seen the constellations visible in that part of the heavens. It will not be necessary to turn the map if the direction faced is south

THROUGH THE TELESCOPE

By ISABEL M. LEWIS

THE first impressions that one receives upon looking through a telescope are often disappointing. Possibly one has expected that the stars would look larger, or at least different, and it may be a surprise to find that each star is only a tiny, sharp point of light. The better the telescope and the clearer the atmosphere the more point-like the star appears. So tremendously far away are the stars that even the most powerful telescope in existence will not show any appreciable diameter in even the nearest of them. A single star viewed through the greatest of telescopes is an object of little interest, but there are in the heavens thousands of stars that appear single to the naked eye and are revealed in the telescope as wonderful, physically-connected systems of double, triple, or multiple stars. One cannot fail to get a thrill upon beholding, for the first time, in a powerful telescope the small, green companion of the fiery red Antares, of which naked-eye vision or the smallest telescopes give us no hint. There are many other exquisitely beautiful double stars, single to the naked eye but easily divided by small or moderate-sized instruments into components of contrasting colors of blue and gold; red and green; orange and green; or blue and red. There is the well-known "double-double" star, Epsilon Lyræ, that consists of two stars so far apart that they can be separated easily with an opera glass, while a small telescope will separate each of these two stars into a double star, thus showing the existence of a quadruple star system where only a single star is visible to unaided vision.

The number of stars visible is, of course, enormously increased even with the slightest optical aid. There are many beautiful star-clusters, such as the Bee-hive Cluster, Præsepe, in Cancer; the Cluster in the Sword Handle of Perseus, where two remarkable clusters may be seen in the same field, or The Pleiades in Taurus, in which the telescope reveals splendors unseen by the naked-eye observer. Among the most impressively beautiful of all telescopic objects are the globular star clusters, of which

more than one hundred are known. Each of these represents a universe of suns lying far beyond our Milky Way system of stars at a distance of thousands of light years. Each tiny point of light in the cluster, and there are often thousands of such points visible in large telescopes arranged in compact globular form, is a sun greater than our own in splendor. It is the thought of what such a small spherical group of tiny, bright points of light represents rather than its actual appearance in the telescope that so greatly impresses us. We are beholding a mighty universe composed of suns upon suns many of which, for all we know to the contrary, may possess planets encircling them where life may possibly exist in many varied forms.

Among other beautiful telescopic objects are the great gaseous nebulæ, chief among which is the Great Orion Nebula, visible even faintly to the naked eye. Embedded in the heart of this great nebula is the sextuple star, Theta Orionis. Four of the six are easily seen in small telescopes and form the well-known trapezium. Other remarkable gaseous nebulæ include the Ring Nebula, in Lyra, and the Trifid Nebula in Sagittarius, in which three, dark rifts are seen to meet in the center of a brilliant, luminous nebula.

The spiral nebulæ do not show up well in the telescope when observed visually because of faintness due to their great distance of millions of light years. They require long photographic exposures with great telescopes to bring out the intricate details of their structure. Among them are included one of the finest of all celestial objects, the Great Andromeda Nebula. It is visible faintly to the naked eye and appears in small telescopes as a hazy, oval-shaped mass. Photographs show it as a magnificent spiral. Its distance is nearly a million light years and it is the nearest of all the spiral nebulae.

When we turn from stellar regions that lie far beyond our own solar system to neighboring worlds within the solar system itself, namely our satellite, the moon, and the planets and their satellites, we find that we are dealing with an entirely different class of objects. If in space beyond there exist planets encircling other suns, such as ours, that fact would never be revealed to us because such objects shine only by reflected light from a brilliant, central sun. They would be hopelessly lost to view in the glare of light from that body, even at the distance of the nearest of the stars.

The planets, Jupiter, Saturn, Venus and Mars, and the Moon are the most interesting objects to observe telescopically. Uranus and Neptune are too distant and Mercury too close to the sun to be seen to advantage. Pluto is so distant that it can be seen only as a small, faint, star-like object in the greatest telescopes. It cannot be seen at all in small or moderate-sized telescopes. Mercury is best observed in the daytime, and Venus also is often observed telescopically when the sun is above the horizon. Both of these planets show phases like those of the moon in the telescope; the crescent phase when in that part of the orbit nearer the earth; the phase of half-moon when farthest east or west of the sun, as seen from the earth; the gibbous phase when on the far side of the orbit. When they have the phase of full moon they are in line with the sun and earth and on the side farthest from the earth, and when the phase is that of new moon they are again in line with earth and sun but are then *between* the earth and sun. In both cases the planet is then invisible from the earth. The first position is that of superior conjunction with the sun, and the second that of inferior conjunction. These are the only two planets that exhibit the phases of the moon in the telescope and for the reason that their orbits lie within that of the earth, that is between the sun and the earth's orbit.

Venus is, on the whole, disappointing telescopically. It is interesting to observe its phases, to be sure, but its dense atmosphere hides all surface features from our eyes and we can only conjecture as to what that dense canopy of clouds conceals.

The moon, Jupiter, and Saturn are generally considered to be the best of all telescopic objects, the moon because of its rugged mountains, great maria and craters, rays and rills. In the greatest telescopes it is brought within a distance of about sixty miles of the earth and objects a few hundred feet in diameter can be distinguished. Saturn is of never failing interest because of its system of three concentric rings composed of countless moonlets, its satellites and its belts. Jupiter is noted for its four historic satellites discovered and first observed by Galileo, and the interesting phenomena of their eclipses, in the shadow of the planet, occultations by its disk, and transits across the disk. The surface markings of Jupiter, their constant change of color and form, and particularly the belts of Jupiter are quite as interesting to observe as the phenomena of the satellites. Saturn and Jupiter both have nine satellites in all, some of which are visible only in great telescopes.

Mars at times of close oppositions is one of the most interesting of the planets to observe telescopically and its two tiny satellites, Phobos and Deimos, are also observable then. At such times its surface shows a wealth of interesting detail and seasonal changes through its rare atmospheric covering, but except when nearest the earth the ruddy planet is rather a disappointing object and is little observed.

Saturn is now in Aquarius visible in the southeast at sunset and well placed for observation in the evening. Jupiter is in Libra visible in the west in early evening. Mars is in Scorpio a few degrees east of Antares and may be seen in the southwest after sunset. (To the naked eye the planet and Antares are now strikingly similar in appearance.) Venus is in the morning sky and attains its greatest brilliancy October 15. Mercury is in the morning sky after October 18 and may be seen before sunrise the end of the month.

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Trailside Treasures

THE FLYING BUSH

By JANE ADAMS PARKER

IT WAS very quiet in the woods, as the three children with Aunt Dot in the lead, walked along the old trail. Little flecks of sunshine, drifting down from between the branches overhead, danced over the carpet of red and gold leaves at their feet. A frightened rabbit scurried across the path.

"I was just thinking," said Aunt Dot, pausing to look back at the children, "of all the little people hidden away under these leaves."

"And in the cracks of the trees," added Rosy.

"Or sleeping in cocoons and chrysalids," said Jerry. "Aunt Dot, what's that flying bush over there? I never saw a bush that had wings before."

Aunt Dot raised a warning finger.

"Let's go quietly nearer the bush," she said, "and look closer at those wings."

Cautiously the four crept nearer Jerry's "flying bush," and sat down on a grassy mound.

"Why, they're monarch butterflies like the one that came out of my green and gold cradle," whispered Rosy. "See, their wings are bright reddish with a black border and black veins, with rows of brown and white spots on the border and some on the tips of the front wings."

"That's just what they are," said Aunt Dot. "And they are gathering here to migrate. That means fly away to spend the winter in a warmer place."

"Aunt Dot," begged Jo, "while we're watching them, please tell us the story about Monarch Butterfly."

"I'm terribly sorry," said Aunt Dot, "that I didn't have you collect a bunch of milkweed plant with some of Mrs. Monarch's crawling babies on it, or better still with the Monarch eggs. Mrs. Monarch is the milkweed butterfly, and lays her eggs on the underside of the leaves. The tiny egg is in the shape of a cylinder with a pointed pearly cap on top. In about three days after the egg is laid, the pearly cap turns a dark purple, and presently the whole egg begins to shake. Then baby caterpillar is about ready to come out. So he gnaws a hole in one side of the shell, and sticks out his little black head. Next, the rest of his greenish-yellow body comes out. And what a beautiful little fellow he is, in his bright suit banded with shining black.

"And what a hungry little person he is too. He eats and eats the milkweed leaves until his skin gets so tight that it has to burst. But he doesn't mind that.

For there he is in another one a little brighter and handsomer than the old one. And every time he moults, which is about four times, until he is old enough to go to sleep and turn into a butterfly, he eats up his old skin. Then, one day, baby caterpillar is full grown. He crawls slowly over the milkweed plant and picks out a spot and hangs himself up on a branch, or some place near by. Then his skin bursts open once more. But this time instead of a new suit he's safely tucked away in a little 'green-and-gold cradle,' like the one Rosy found."

"Then in about ten days," went on Rosy, picking up Aunt Dot's story, "we could see the black veins and spots right through the chrysalis shell. And pretty soon out came our lovely butterfly. Maybe he's on that bush with those others."

Aunt Dot smiled down into Rosy's upturned face. "And now I have a little surprise I kept for our rest time in the woods," she said. "A letter from—who do you think?—Mr. Jake, The Snake Man. And here's what he says. . . .

" 'Dear Little Treasure Hunters:

I am sorry I could not get back to see Rosy's butterfly. But I had to make a hurried trip down through the southeastern states. I told some little folks, around your ages, all about your treasure hunts. And right away, they wanted to go treasure hunting too. But in these woods are all four of the poisonous snakes that we have in the United States: Copperheads, Rattlesnakes, Water Moccasins and the Coral Snake. So I thought best to have them learn about the poisonous ones first, to avoid them. For, although snakes don't run around after people, as cross dogs do, to bite them, yet they do bite when angry or frightened. So I took them all to the zoo, as the best and safest way for little folks to study poisonous snakes. And they are going to write you some of the things they have learned. So expect to hear from your little far-away treasure-hunter friends in a few days.

With best wishes,

Jake, The Snake Man.' "

"I think that's dandy," said Jerry. "Then we can write back and forth to one another and tell all about the treasures we find where we live."

(To be continued)

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How Day and Night Were Divided

(A Creek Indian Myth)

Retold by DOROTHY E. PLETCHER

LONG, long ago the animals were holding a meeting. No-koos-see (Nokosi), the Bear, was the leader. Said he: "My friends, our problem is, how shall we divide day and night?"

Then the argument began. Some of the animals wanted the day to last all the time. Can you imagine what it would be like to have daylight all of the time, even after your bed time? Other animals wanted it all night. After many animals had spoken, Chew-thlock-chew (Tciloktco), the ground squirrel, said:

"I see that Woot-Kew (Wotko), the Coon, has rings on his tail divided equally, with first a dark color, then a light color. I think day and night ought to be divided like the rings on Woot-Kew's tail."

The animals were indeed amazed. How very wise Chew-thlock-chew was! Right away they used his plan and divided day and night like the rings on

Woot-Kew's tail, succeeding each other in regular order.

Now this made No-koos-see, the Bear, very angry, for he was jealous of the way the animals praised the Ground Squirrel for his plan. So he scratched Chew-thlock-chew's back. And that is what caused the stripes on the backs of all the Ground Squirrel's children, and his children's children.

The Clever Chimpanzee

By CLARENCE M. WEED

THE CHIMPANZEE is thought to be the most intelligent animal. During the millions of years it has been living in Africa it has learned many clever ways. When kept captive by man it is soon happy in its new home. It shows real intelligence instead of instinct. The German philosopher, Wolfgang Kohler, spent years observing the chimpanzees. Some of his pets solved the problem of reaching a banana by placing boxes on top of each other.

One of the ways scientists use to test the apes is to place a banana or other food outside the cage beyond reach. A stick or two is placed on the floor of the cage. The chimpanzee will frequently use the stick to reach the banana and draw it in. If the stick is too short the ape will try in various ways to make it reach but finally will give up. A very intelligent chimpanzee named Sultan, owned by Professor Kohler, became famous for solving such problems.

Two short hollow bamboo poles, one much larger than the other, were left on the floor of Sultan's cage, with a banana outside beyond the reach of either pole. Sultan tried for an hour to get the banana. Then he sat down with a pole in each hand, moving the sticks aimlessly about. Finally, while holding the larger one in his left hand, the other in the right, he saw the hole in the larger bamboo. He pushed the smaller pole in and jumped for the bars with the long pole thus made. He drew in the banana and afterwards put the sticks together whenever they fell apart.

Another clever way in which Toto, a pet chimpanzee, solved a problem in reaching food is related by Cherry Kearton, famous African explorer. Toto was given a bottle in the bottom of which was a cherry that stuck to the glass. Toto tried various ways of getting it out. At last he picked up a chicken bone from the table, put it in the bottle and drew out the cherry. Surely this was more than instinct.

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The Dandelion and the Toadfrogs

By ANN DEAN

(Seven years old)

I wish I was a dandelion
With toadfrogs all around me.
And when I got so round and gray
Big toadfrogs would puff and say,
"Gr-r-r cr-roak, gr-r-r cr-roak,"
And I would fly away.

Nature Magazine in School

In order that teachers and parents may further use Nature Magazine as an aid to the study of Nature and Science, this page is devoted to the following brief notes based upon articles in this issue and suggesting ways in which they may be used as a source of inspiration and information. To bring these Nature study thoughts to our readers we have obtained the services of one eminently qualified for the task, and this department is edited

BY ESTHER SCOTT

Instructor in charge of Elementary Science Washington, D. C., Schools

WILD BROTHER'S SECRET HOMES

In this article persons desiring to guide the thinking of children will find many suggestions for guiding observation and interpretation. In a delightful way this story gives an indication of the wide variety displayed in the location, materials and construction of the homes of different animals—the location being suited to the habits of the inmate, the materials available and transportable and the construction limited to the tools of the workman. Children can be shown the actual home of the wild creature or a picture of it and from their questions be led to find out what it is made of, where it is located and how it was made.

For instance—The spider mentioned, being exclusively a land creature, selected a dry home, constructing it out of materials which were "immediately at hand," such as earth and web. Only a creature adept in the art of weaving could possibly make such a home. If possible, children ought to see the real home of a trap door spider. They will wonder how the spider could make such a home and from their questions they can be led to learn more about the adaptations of the spider, such as the spinnerets and the wonderful secretion that hardens in the air to a silk-like thread.

WHAT PRICE FISH

Teachers who read "What Price Fish" will have the desire to give their pupils some understanding of the balance of Nature and some appreciation of the interdependence of organisms. However, such underlying ideas as these cannot be gained all at once but must be built from experience. This point of view was illustrated at Cornell when it was noted that the persons who did not step on the ants on the sidewalk were the students in the entomology classes. So in the case of the fish-eating birds, children can be led to understand their significance only by knowing something about them.

At this time of the year when interesting relics of the summer vacation are brought proudly to school, there may be among them materials such as clam shells broken by sea gulls, which could serve as a lead to a lesson on the habits of water birds. Children could tell their experiences with birds at the seashore; could list foods they believed the water birds had been seen eating. The article could be read as a check upon observation. Following the study of water birds, this article would serve as a check on the attitudes of children. Doubtless pupils would disapprove of the wanton destruction of water birds by man and want to do something about it. Classes with enough knowledge might even register their opinion by writing to game wardens and government groups to plead for a more judicial attitude toward conservation.

ATTITUDES OF BIRDS

The ability to know a bird in its every pose gives keen delight to the true lover of the out-of-doors but it is an accomplishment gained only through painstaking study. In consequence, not every child in a class will have the ability or the interest to obtain facility in it. However, there will probably be in every class one or more pupils who would enjoy reading the article "Attitudes of Birds" and try to sketch in their notebooks the poses of some other species, for instance, the English sparrow. In these drawings and in any descriptive notes these children should be encouraged to bring out variety of action, as perching, flying, feeding, singing, or nesting; as well as to indicate some of the details of structure that make these actions possible. At times during the year these youthful artists should be encouraged to show their work to the class and tell their classmates about it, thereby spreading the interest in living things to other members of the class.

MINNIE, THE MOOCHER

Animals may become our friends, even as Minnie the Moocher did. This article suggests the method by which a chipmunk might be tamed. The story of Minnie the Moocher is one that might well be enacted around school buildings situated near parks or in the open country where chipmunks and squirrels make their homes. The actual taming of one of these wild neighbors would give those taking part more tolerance for and sympathetic understanding of wild creatures than ever could be obtained from books.

WOL, THE SWEET

Children are often interested in the extremes of size. Here is an opportunity to introduce them to one of the smaller owls. They could read the article to find out how the owl acted, what he ate, and from this deduce his value in the wild state. This might lead to a study of carnivorous birds, their habits and their economic importance.

THE WEATHER-MAN LOOKS UP

Here is an article dealing with a subject more interesting to children than is generally supposed. However, since ideas about the weather are fraught with superstitions, the teacher has an opportunity to show that the weather results from natural conditions acting in perfect accordance with law. The reason our weather predictions have been at times inaccurate is because the sky is so wide and deep, and until more recent discoveries there was too much going on for us to comprehend all at once. By indicating the directions in which our knowledge of the atmosphere is growing, this article opens up a new field of interest. After reading this article several children in a fifth or sixth grade could be assigned special topics such as the stratosphere, the "ionesphere."

Out of this a unit on the weather could develop, in which, after further reading and performing experiments, the pupils could predict the weather, keeping a record of the agreement between their predictions, or those of the weather-man, and actual conditions.

SOME BOOKS

Nature Chats

In *Nature Chats, a Year Out-of-Doors*, John Harvey Furbay has packed into two-hundred-odd pages more interesting facts about the outdoor world than we believe has ever before been done in equal space. Under the four seasons, and an appendix, are given sixty-two essays on significant phases of Nature. These include the answers to many questions that confront the amateur student, and subjects that are particularly pertinent to the seasons. Thus, under Autumn, we find explanation of the coloring of leaves and why and how they fall; the migration of birds; how seeds are scattered; odors and their purposes; how trees and various animal forms spend the cold season; how seeds are stored for the spring growing. There is a chapter on hibernation and the various theories concerning it, no one of which seems adequate for all its phases.

The courtship and home life of birds occupy several chapters under Spring. The treatment under Summer includes chapters on the hummer, our smallest bird; the bat; fireflies; Nature's musical festival; instinct; traveling houses; and the god of Nature. In the appendix are a series of useful articles on the preservation of plant and animal specimens; Nature study projects; a bibliography; and a brief list of dealers who supply material needed by Nature students. There are numerous brief quotations from poets of Nature, these well selected and appropriately distributed, and the book is well illustrated and indexed. This book is published by the Science Press Printing Company at $2.50.

A Book of Poems

A group of geographic poetry of America by Isaac Hassler is collected into a volume under the title *Land of the Double Oceans*. This is a book mainly of patriotic and historic poems and constitutes, as such, a rather interesting and different collection. It should be of use to school teachers planning commemorative exercises. The publisher is Dorrance and Co.; the price $1.75.

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Don'ts for Healthy Shade Trees

By R. R. Fenska, M. F.

1. Don't plant trees in the ground too deeply. The roots should be placed the same distance in the ground as they were in their original site.

2. Don't plant a tree in soil not properly prepared, or not suitable for the particular environment.

3. Don't forget to trim back the tops of deciduous trees to correspond to the amount of root system removed when transplanting shade trees.

4. Don't let trees suffer for lack of water. Street and lawn trees should be watered after sun-down.

5. Don't forget to provide certain plant food elements for trees not growing under forest conditions.

6. Don't neglect to spray your shade trees for the control of the common shade tree insect enemies.

7. Don't overlook small bark injuries. They are easily repaired and will save expensive tree surgery later.

8. Don't plant trees too close to buildings, sidewalks, driveways, etc. Visualize the size of the tree 50 years in the future.

9. Don't plant short-lived trees. They disintegrate just when they should serve their purpose.

10. Don't let inexperienced tree-surgeons operate on your valuable shade trees. It is too costly in the end.

Sea Lion Movies

Dr. Waldo L. Schmitt, Curator of Marine Invertebrates of the United States National Museum and a member of our Scientific Consulting Board, has recently shown before a number of organizations some remarkable motion pictures of the elephant seals of Guadalupe Island and of the life and education of a sea lion, including the birth of a young sea lion. He now advises us that these pictures have been made available by Captain G. Allan Hancock for scientific and educational purposes at only the cost of printing and providing reels and containers. These pictures are on 16 mm. film and cost, for a full reel of the elephant seals, something under twenty dollars, and, for nearly a full reel of the sea lion pictures, about twelve dollars. All correspondence regarding them should be addressed to Mr. W. Charles Swett, 705 Hollywood Security Building, Los Angeles, California. Mr. Swett took the pictures and is Captain Hancock's representative in the matter.

Reading to Learn

Recently we reviewed the first book in the series of readers under the group title of *Reading to Learn*. These volumes are the joint work of Gerald A. Yoakam, William C. Bagley and Phillip A. Knowlton, and the second and third books now come to hand. They are described as "work-type informational readers" and their plan is not only to provide well-chosen reading texts but carefully to select these texts for the systematic informational material in them. These are, therefore, dual purpose readers and should find a ready welcome. The publisher is the Macmillan Company.

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Hiking and Camping Forum

CONDUCTED BY
ERNEST A. DENCH

Hiking and camping inquiries will be answered by mail if a stamped addressed envelope is enclosed. Address the Forum editor.

A parody on "A-hunting we will go" is to be found in the song sheet of the Sky Line Trail Hikers of the Canadian Rockies. Stanza two has these lines:

"The loafer around the hiker throws
His arms and bids him stay.
'You fool! It rains, it hails, it snows,
You fool! It rains, it hails, it snows,
You should not hike today,
You should not hike today,'
But a-hiking we will go, etc."

Naturally, you will consult our "Let It Rain" bulletin beforehand. It gives sound advice on rainy day trips and sources of supply of waterproof clothing and equipment. Price 3 cents to members, or 10 cents to non-members.

PHOTOGRAPH BY LAURA ALLEN

TWO FAIR PARTICIPANTS IN THE INTERCOLLEGIATE OUTING CLUB ASSOCIATION COLLEGE WEEK OUTING EVENT AT GREAT GULF

Brevities

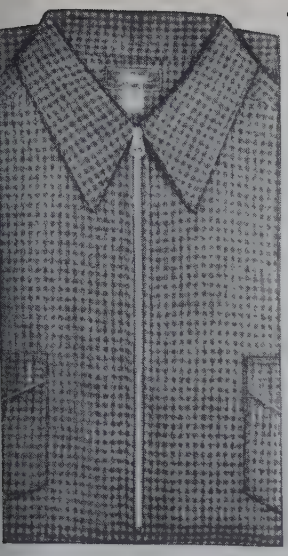
Consult guide books and maps *before* and *during* a trip. After it read books which fill in the background, making places and scenic descriptions really come to life. Were you in New Hampshire this past summer, *Behold the White Mountains* (Little, Brown and Co., Boston. $1.50) is recommended. Miss Eleanor Early has a chatty style which fits the anecdotic trend of her book. . . . "Unless you are an experienced hiker, take the shorter hikes at first," is the sensible tip of the Cleveland Hiking Club to guests. . . . Crystal Lake Camp, located in the mountains of Los Angeles County, takes no chances with forest fires during the dry season. Campers are granted the use of a rustic building, equipped with coin metered hot plates, operated by electricity. Each plate provides room for three cooking utensils . . . . What's this—a club urging hikers to carry umbrellas in case of rain? A backward step. . . . An improvised sleeping bag suggested by the Chemeketans (Oregon): "Take several woolen blankets and a piece of waterproof canvas, about 6′ by 8′. Use jumbo safety pins for pinning canvas to the blankets." . . . Editor Anena Hansen of *The Minnehiker* (Minneapolis) runs a breezy front-page column, *The Trail Ahead*, giving highlights of pending trips. On the back page a *Rear View Mirror* column briefly chronicles the past month's hikes. A flippant extract: "Thirty hikers and 30,000 mosquitoes enjoyed the hike to the camp grounds on the tenth." . . . A newly organized group, the Lebanon Valley Hiking Club, assumes the maintenance of a section of the Appalachian Trail in Eastern Pennsylvania. . . . The sad, sad case of a Western club leader losing his way and the well-meant efforts of the participants: "No one definitely knew the path, but everyone had an idea as to its whereabouts, which resulted in an interesting study of pathology." . . . The kilt is glorified by a woman writer in the *Y. H. A. Knapsack* (England). She finds the garment unexcelled for hiking comfort. Should any American lassies be seriously interested, the Forum editor knows of a Scottish firm which makes kilts to order—and they may choose any clan they wish! . . . Sierra Club advocates a public agency to make the High Sierra safely accessible the year round. An intensive trail system and plenty of huts would ensure this condition. The open season is now four months. . . . A prominent automobile manufacturer plans to produce a good trailer for $150—as good, if not better, than that which commands $500 today. Mass production is the so-called secret. The chief obstacle is equipping the trailer with a cook stove, which some state laws forbid in traveling vehicles. . . . By hard, conscientious work on behalf of the Appalachian Trail Conference, Mary Josephine Kempt merits the new office of Assistant Secretary. Miss Kempt also ably edits the bulletin of the Potomac A-T Club. . . . By the time you read this the Mountain Party of the Field and Forest Club (Boston) will be over. They congregated for two weeks at Franconia, N. H. . . . More than 100 hikers of the Southern Appalachian clan recently gathered for a campfire pow wow. Participating clubs were the Smoky Mountains Hiking, Carolina Mountain and the Georgia A-T. . . . Unkind on the ladies is the pre-camping trip reminder that—"two dozen pairs of colored shorts are not necessary."

Pacific Crest Trail

Until recently the Pacific equivalent of the Appalachian Trail lacked a central authority —one to wield the loose ends into a unified whole. To remedy this we now have the Pacific Crest Trail Conference, with Clinton E. Clarke heading the executive committee.

Either late next year or early in 1937 should witness the "signing" of the trunk trail from British Columbia to Mexico. The toughest section, 440 miles, is in Washington, as only half of it is in usable condition. U. S. Forest Service agrees to complete it by 1937. Conditions ranging from good to fair prevail in Oregon, 410 miles—and also Northern and Central California, 940 miles. Southern California, 480 miles, is in excellent shape, although it is planned to place the path in a more secluded area south of Mount San Jacinto to Mexico, 160 miles.

(Continued on page 252)



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Captain "Bob"

It has been well said by someone that sea fever quickens the pulse and imagination of every man. There is something about a schooner, all canvas set, crashing through stormy seas to some far away destination, mountainous waves, gales through the rigring, peril in every position from master to seaman, every moment one full of adventure—there is an indefinable something about such a scene to thrill everyone. But to those of us upon whom circumstances force the rôle of armchair adventures, and who must face vicariously, if at all, the perils of the explorer, there has just been issued from the press a volume entitled *Sails over Ice* and written by our old friend, Captain "Bob" Bartlett, which will have a tremendous appeal to all who envy the explorer his thrills, and the lover of the out-of-doors his opportunities. This book (Scribner's, $3.00) is the record of the nine voyages that Captain "Bob" has taken to various parts of the Arctic in his staunch little schooner, "The Morrissey," which was built some forty years ago, purchased by him in 1924 through the kindness of his friend, Commodore James B. Ford, and in which he has sailed to places many and far away since that time—to Greenland, to the Labrador, to Iceland, through the Bering Straits, to Spitzbergen, and to many other places. Most of the voyages were undertaken for scientific purposes, and on many of them motion pictures were prepared of scenes in the Far North. Those of us who had the good fortune to be present when Captain "Bob" showed and discussed some of these at various Geographic Society lectures will long remember the events with pleasure and will be glad to know that the doughty Captain even now is far away in the Northland again gathering material for our future entertainment and instruction. Yes, the armchair adventurers will find that this book, like "The Morrissey" described therein, will race along, will present many an example of courage and fortitude, of wisdom and good cheer.

Rocks While Walking

What do you know of the history and meaning of the rocks and rock formations you see on a hike? Most of us know too little and a fundamental knowledge would add tremendously to the interest of such hikes. So just put in your pocket a copy of *Along the Hill* by Carroll Lane Fenton, a little field book that in text and simple clear drawings opens the door to more interesting trips afield. This is a John Day book and sells for $1.25.

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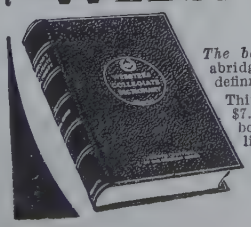

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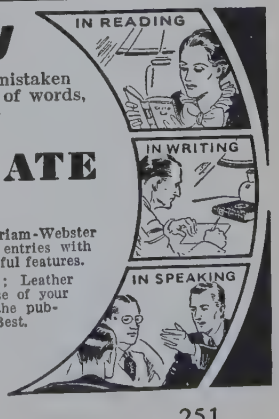

Hiking and Camping Forum

(Continued from page 250)

The present route is principally over roads and through developed areas.

The Pacific Crest Trail System (hereinafter abbreviated to P.C.T.S. in this department) is a merger of six regional trunk trails: Cascade Crest (Washington), Oregon Skyline, Lava Crest, Tahoe-Yosemite, John Muir and the Desert Crest. The last four are in California. Terminals have yet to be designated.

The P.C.T.S. will bear a distinctive metal marker, design of which is in preparation. Shelters will be established at a day's walk apart, while water will be provided in dry areas.

Eventually the booklets and maps issued by the National Park and Forest services will describe the P.C.T.S. Meantime there's the preliminary guide book, prepared and published by Clinton E. Clarke, Hotel Vista Del Arroyo, Pasadena, Cal., at 20 cents a copy.

Both the Y.M.C.A. and the Boy Scouts have officially adopted the P.C.T.S. as an advanced camping undertaking. Between mid-June and late September knapsacking "Y" teams expect to complete, in 75-mile installments, the 1420 miles of the P.C.T.S. in California. The official guide is Warren L. Rodgers, who wore out his boots (he admits he should have had steel heels put on), and was obliged to leave the relay after completing 465 miles in 31 days.

Early in August, twelve "Y" teams had completed about 850 miles. One team did exceptionally well in going 14 days (175 miles) without access to food depots. Each lad carried a 55 lb. pack—and this in High Sierra country. Food contents of each pack amounted to 35 lbs. Mr. Clarke prepared the food list on the average daily basis of 2½ lbs. per person for a camping unit of four—the ideal number. The "Y" plans to cover Oregon and Washington next summer.

Pacific councils of Rover Scouts will, in 1936, undertake hiking and camping expeditions along 25- to 50-mile sections of the P.C.T.S.

It is not too soon to plan your 1936 vacation, for Mr. Clarke invites you to "get off the soft seat of a car and knapsack over parts of the P.C.T.S. next year, preferably with a few seasoned friends—the 'can take it' kind."

The P.C.T.S. penetrates the high mountain divides, where exist the last of the true western wilderness areas—America's one remaining frontier.

College Week Trip

The Intercollegiate Outing Club Association selected an ideal camping base for its fourth annual College Week this September.

The Forum editor made Lake Colden (Adirondacks of New York) his rendezvous for four glorious days last year. Each day he climbed at least two major mountains in the vicinity. There are eight lean-tos on the shores of this inland gem, with seven others within a five-mile radius. Comfortable indoor accommodations are available about six miles away, at Adirondak Loj, operated by the Adirondack Mountain Club chapter of that name.

Lake Colden is perfect for a large camping party wishing to get in some good one-day hikes over well-marked trails to high peaks.

Walter E. Williams will direct the operations of the host club, Union College Outing Club, at Lake Colden. I.O.C.A. members have been provided with some genuinely helpful clothing, equipment and food lists, compiled by Mr. Williams. As some of the hints are worth passing along to a wider audience, we will quote a few: *CLOTHING*—The fewer sweaters the better, as they are not closely woven, and therefore not warm. Light-weight flannel shirts and one heavy flannel shirt make the ideal set-up. *PACK*—Do not have all the weight in the back so that it pulls you backwards. Neither pack it too high; have it rest on your hips if possible. *FOOD*—It is unnecessary to carry food which contains water, the most plentiful beverage in the woods here. Why, then, carry excess weight in canned goods?

The new I.O.C.A. executive secretary is Howard S. Cady of Middlebury College, the official editor is J. Reginald Springstead, who will produce the quarterly Journal in an enlarged and improved form. Individual memberships ($1.00 yearly, which includes the Journal) may be arranged through Mr. Cady at Middlebury, Vt.

A Western Gathering

The Obsidians acted as hosts to the Federation of Western Outdoor Clubs, when gathered over the Labor Day week-end at the White Branch Shelter Cabin, in the Willamette National Forest, Oregon. From their headquarters in Eugene, the Obsidians concentrate on the Three Sisters terrain, in the mid-Oregon Cascades.

Many Chiefs and Princesses are on this club's membership roll. Such titles are conferred on those Obsidians who complete the summits of all the Sister peaks, each about 10,000 feet high. The club owns cabins in the Upper Mackenzie Valley. Local walks are conducted every Sunday, with Cliff Stalsberg in charge of this program. J. D. Hamlin is president of the Obsidians.

Colorado High Trail

We hazard a guess that the July issue of *Trail and Timberline* will soon be out of print. It will be prized for the second and improved edition of the High Trail map. The map is a folded insert, printed in three-colors on tough rag bond paper. Chocolate brown tints are to the fore—contours, of course. Map is a tribute to William Nagel's skill as a draftsman.

The High Trail is proposed by the Colorado Mountain Club as a means of crossing, on high, the Colorado Front Range from Mt. Evans to Longs Peak. Subscriptions to the club's monthly magazine are accepted at $1.50 yearly. Chamber of Commerce Bldg., Denver, is the address.

"When Do We Eat" Items

1. It is now possible to make fresh chocolate fudge in camp. All the ingredients (except a small quantity of lukewarm water) are inside a 1 pound paper bag.

2. An experienced hiker, in her search for the right kind of dessert chocolate, found most kinds either too sweet or too bitter. She highly recommends a semi-sweet chocolate (Swiss fondant process) in ½ lb. cakes. You can sample it in a nickel bar. The big cake is best for trips, as it does not soften so easily in warm weather.

3. If you have baking facilities—or can improvise them *vide* Mrs. Dildilian's experiments described elsewhere in the Forum—you can now make gingerbread with a prepared mix. Only lukewarm water is required for the batter. Usual size can produces a cake 8x8x2 inches. Same firm offers a Devil's food mix.

4. A tin of malted milk tablets becomes an emergency ration without adding more than a few ounces to your pack, where it can be left from trip to trip without risk of spoilage. It is claimed the tablets will sustain one person for 24 hours. Food elements are the malted grain and full cream milk, rich in vitamins and minerals.

5. A New York department store operates one of the biggest grocery departments in the country. Specialized needs of the camper and hiker are met in some of the items stocked. Mail orders are filled, for which purpose a 124 page catalog is issued.

6. Pure juices of garden vegetables are now bottled by a patented process. One ounce of liquid amounts to about one pound of the bulk vegetable. The smallest-size bottle, 12 ozs., will serve a group at one meal. Not recommended to the solo hiker or camper, for, without refrigeration, contents of bottle spoil within a reasonable time after opening.

7. Some friends of the Forum editor are disgusted with the wabbling of the usual portable table (card party type) for camping or picnic trips reached by car. They and others will welcome the advent of a sturdy folding table of solid wood, varnished. Construction of legs makes them foolproof against folding up at inopportune moments. Even a foot rest is provided.

A circular gives the names of the above items and where they may be obtained. Send a stamped addressed envelope to the Forum editor, asking for it.

On the Rocks

The senior leader of a Western club, after conducting mass parties on 500-foot rock climbs without an accident, proposes that they be discontinued. This expert maintains that unity of purpose is impossible with large numbers. In the interests of safety, such tryouts should be on low rocks, where the fall—if any—is not more than five feet. He makes this shrewd analysis: "The thrill comes from the solution of a difficult problem; not from the sheer attainment of elevation."

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Maps—Just Maps

Indiana Dunes: Four of the dunes in the state park—an hour by rail from Chicago—are more than 700 feet high. Mt. Tom towers above the rest of the bumps overlooking Lake Michigan. Free trail map from the South Shore Line, 140 S. Dearborn St., Chicago. Other pleasant walks reached from Chicago are described in leaflets sent with the map.

Los Angeles County: Pacific Electric Railway, Los Angeles, will send, free, a *Mountain Trail Trips* folder. It outlines 42 separate hikes, duration 1 to 6 days, accessible from ten Southern California cities. Folder includes a trail map.

Metropolitan New York: The new Hikers' Region maps are issued in blue print form. Stamp secures a list of them from the Wanderbirds, 556 Fairview St., Brooklyn, N. Y.

New Hampshire: A 1935 state map, 4 miles to the inch, should prove a useful adjunct to other maps you use here. It gives forest camps and public camping grounds. Gratis from the New Hampshire State Planning and Development Commission, Concord.

Maine: A series of ten county maps issued by the timberland service engineers—Prentiss and Carlisle Co., 12 Hammond St., Bangor. Scale is 2 inches to the mile. No contours, but trails, tote roads and discontinued highways are in evidence. Maps are $1.00 each, list on request.

The Appalachian Trail Conference has released two news maps—*Katahdin to Mt. Saddleback* and the *White Cap Region* (East Branch to West Branch of Pleasant River). The first—no contours—is valuable for designating specific overnight halt possibilities—sporting camps, public campsites and farms. The second, reproduced in a delicate blue and brown two-tone effect, gives the main contours. Maps are 50 cents each, from 901 Union Trust Bldg., Washington, D.C.

Virginia: Old Rag, grim isolated crag of the Northern Blue Ridge, is the favorite climb of the Potomac Appalachian Trail Club, who produce this new map, 50 cents from their headquarters at 609 American Security Bldg., Washington, D.C. Climbing is not finished after you reach the 3291 feet summit, which is cracked from end to end. You traverse boulderous tunnels, bridges, arches and caves. The well-routed trail gives the walker a zestful trip. Forum Editor considers Old Rag the highlight of his Virginia trip.

Another new map by the Washington club is from *Mount Weather to Ashby Gap,* on the Appalachian Trail. Price 35 cents.

Prepared Flour Experiments

Mrs. A. T. Dildilian takes the prepared flour manufacturers to task for overlooking the hiker-camper in their recipe books and package directions. She considers such products especially suitable for "going light" trips, as they do not call for baking powder and shortening.

Mrs. Dildilian experimented with two of the prepared flours during a honeymoon trip along the Long Trail of Vermont. For variety she combined the flour and water mixtures with powdered eggs and milk. One

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For everyone who wishes to be informed on the most practical of sciences. Coherent, leading logically from the days of the alchemist to the most recent researches, it is entirely free of chemical formulae, equations and mathematical expressions so forbidding to the non-technical reader.

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140. TALES OF LONELY TRAILS by Zane Grey
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Under the auspices of the Field Museum of Chicago, Theodore and Kermit Roosevelt undertook the expedition detailed in this book to secure a Giant Panda. The story is an extraordinary document of courage and persistence in the dangerous pursuit of one of the rarest animals known to science.

156. STORY OF CIVILIZATION
by George A. Dorsey
A panoramic view of man's struggle up from the apes, of his life from the earliest times as a member of organized society.

J-20. ANDREE'S STORY
—from Diaries & Journals of S. A. Andree, Niles Strindberg and K. Fraenkel found on White Island 1930
In 1897 a balloon carrying three men sailed away into the arctic regions, hoping to fly over the North Pole. They did not return. In 1930, on a desolate and scarcely visited island in the Polar regions, the crew of the sailing vessel Bratvaag discovered the remains of a camp. The diaries, etc. tell as stirring a tale of courage as history has to offer.

S-7. PORTRAIT OF A DOG by Mazo de la Roche
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biscuit preparation she fried in bacon fat, adding powdered milk, eggs and raisins. The balls evolved from the mixture proved so tasty to the Dildilians that there were no left-overs.

One wet day they reached a lean-to at noon, and decided to tarry and dry out. The abundance of time inspired a major baking operation—a cake and a loaf of bread by the double boiler method. Covered pails, first greased, were used for the dough, and two folding kits for the water. Kit covers went over the pails. The pails with the dough were set in the frying pans, filled with boiling water. Loose nails were used to prevent the pails resting against the bottom of the pans, but pebbles or twigs would do just as well.

The bread recipe called for a cup of biscuit flour, ¼ cup of powdered milk, plus sufficient water to ensure a soft dough. The same mixture, but with the addition of a ¼ cup of powdered egg and three broken lumps of cube sugar, served for the cake. They were cooked until done—a matter of several hours, and proved good to the last crumb.

Although the honeymooning Dildilians were on the trail eight days, no meal was identically the same.

Light-Weight Camping

Several mail inquiries received from Forum readers indicate keen interest in light-weight camping. Possibly there are others who wish to know more about the subject.

The two leading American exponents of light-weight camping are W. W. Cady, 438 West 57th St., New York, N. Y., and Arthur C. Comey, Chocorua Mountain Club, Harvard Square, Cambridge, Mass.

Mr. Cady has a summer tent weighing 2 lbs. 3 ozs. His winter model tips the scales at 3 lbs. He is working on even lighter ones. His successful experiments extend to other items of equipment and clothing. It is one of his hobbies, and Cady is honest in admitting the limitations of light-weight equipment, which has to be handled with great care. The commercial outfitting firms usually steer clear of this intricate field, because of the refunds they are expected to make from campers and hikers who have carelessly handled these fragile products.

Comey offers, for a nickel, a printed booklet of 16 pages on *Going Light*. It carries two photos of the light-weight tents, each under 2 lbs. which he has produced. There is an abundance of practical information in this booklet.

Birds of the West

We predict a hearty welcome for *Familiar Birds of the Pacific Southwest*, a handy, attractive and valuable guide, the intent of which is well described by the title. This is the work of Florence V. V. Dickey. This little volume is supplied with simple data, and size and color keys, and is liberally illustrated in color reproductions of 102 photographs by Donald R. Dickey. One hundred and twenty-two birds are covered. The book sells for $3.75 and is brought out by the Stanford University Press. The 102 colored plates, unbound, are separately available at $2.25 for the set.

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My Neighbor's Robins

By Ada E. Stubbs

There is a row of small brick houses in a busy section of the city, not far from the Washington Monument. The corner house is occupied by several adults and two small children. Early this spring they observed a mother robin building her nest in the transom over the side door. This door is used more than any other but the robin seemed not to mind and went on her busy way. At one stage of her work, she left long ends of straw hanging in front of the door; these were carefully cut off and placed on the ledge and a bit later they observed her working them into the nest. Upon completion of the little home, she took possession and in due time laid her eggs. Each morning and evening, a dish of water and food was placed near her. She seemed not at all alarmed by the comings and goings of the family but sat placidly on her nest while being watched.

In due time, five baby robins made their appearance and then the "Old Man" took a hand in the care of his family. He busied himself all day bringing nice long worms for their increasing appetites, and when the fodder was too big, it was divided into suitable lengths and both Father and Mother placed a piece into the yawning mouths. All these operations were witnessed by the family, singly or en masse, without disturbing the birds at all.

When the time came for them to try their wings, one went a little too far, but he was tenderly picked up and brought back to the nest. However, in a few days both he and his brothers and sisters flew away into the unknown. Only the nest now remains waiting for their return next spring.

Planting Bulbs

Very often when the bulbs which you plant in the fall do not seem to develop properly in the spring, there is a simple reason. In many cases the reason is the lack of a good supply of balanced plant food in the fall and early in the spring.

Bulbs make a slight root growth in the fall and start growing very early in the spring. They have a real man-sized job in the spring—growing stems, leaves, and producing flowers.

If they have an available supply of plant food when they are planted in the fall, they will develop a stronger root system during the fall season. More important than this is that they have an available supply of plant food ready when they start to grow early in the spring. Bulbs start to grow so early that it is impossible to work the soil and get a supply of plant food available to their roots before growth starts. If plant food is applied when the bulbs are planted in the fall, it will be available for this early spring growth, which is very important.

This year, when you plant your bulbs, mix with the soil in the bottom of the trench two pounds of a balanced plant food per 50 feet of row, or use four pounds per 100 square feet. You can be sure the bulbs will have the necessary plant food to produce finer blossoms and more well-matured bulbs for next year's blooms.

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tures by H. Rossiter Snyder have been gathered into a book, and published by Loring and Mussey of New York. Interesting in themselves, the pictures are also excellent examples of the photographer's art. Point is given to this value by an afterword by the author and photographer in which he makes some comment on specific points brought out by the pictures, and gives some general advice on photography. This is essentially, however, a picture book. It sells for two dollars.

Forest Management

The actual management of forests in America as a perpetual crop has had to wait on many things—fire protection, relative scarcity of timber, overcoming of old prejudices, and the almost total absence of precedent. All these have conspired to prevent the application of scientific husbandry to our woodlands on anything approaching a national scale.

Management of American Forests by D. F. Matthews should help to stimulate interest in this important field of forestry. Although designed primarily as a textbook, it is essentially practical, and deals with the problems of managing forest properties from both the technical and financial standpoints. Business planning is an essential part of American forestry, and the financial point of view is stressed throughout. It is this skillful blending of technical and financial, of scientific and practical, that makes the book of value both to the forest manager who is interested not in theories but in how to make his forests most productive, and to the student of forestry eager to increase his knowledge in the sphere of forest management.

The book is one of the American Forestry Series, of which Walter Mulford, Professor of Forestry at the University of California, is consulting editor. It is published by McGraw-Hill at five dollars.

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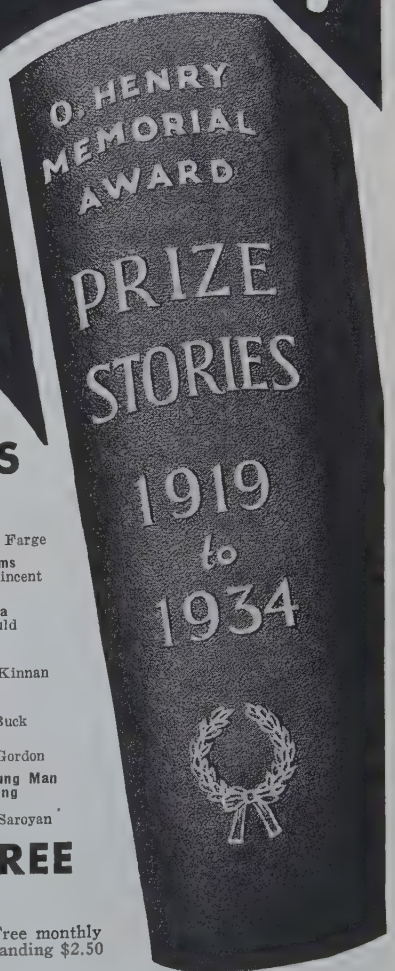

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Photographic Notes

BY SAMUEL BROWN

Stereo-Photography

In response to persistent requests from our readers for an article on stereoscopic photography, we are devoting a part of these notes to this particular subject. Twenty years and more ago, viewing of stereo pictures was a favorite pastime. Teachers used them in classrooms for group teaching and study. Modern stereoscopic equipment has kept pace with the times and practically perfect instruments are available.

Before we enter into a discussion of modern methods and instruments, we feel that a brief description is not amiss. When we look at an object we see it in three dimensions: length, breadth and depth. Only two of these are apparent when viewed with one eye, and the third dimension, i. e., its thickness, depth or relief, escapes us. Thus near and distant objects appear to be flattened out instead of standing out separately.

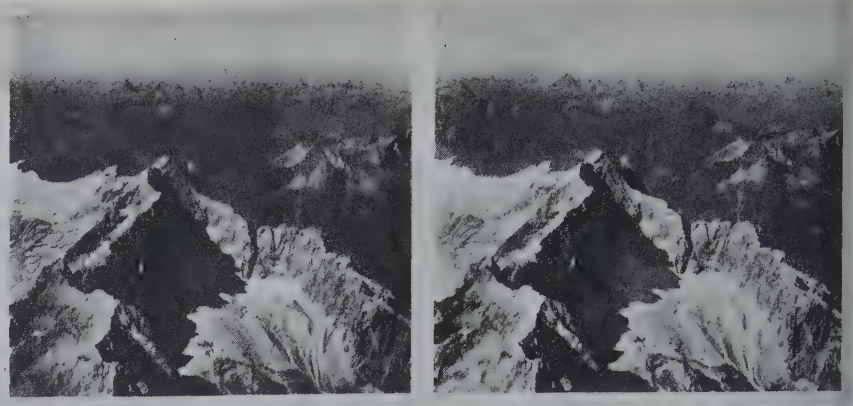
As the separation between the eyes is about 2½ inches, each eye sees a distinct but slightly different picture of every object upon which it is directed, the object being viewed from two different points at the same time. These two pictures are blended, in the brain, to form a single record in all three dimensions.

Stereoscopy, then, is simply a method which follows the natural way of seeing things with two eyes. A stereo camera is fitted with two lenses set horizontally and separated by about 2½ inches and takes two pictures from slightly different points of view. At first appearances, these two pictures appear to be exactly alike. However, when placed in a stereoscope—which is a little instrument for viewing stereographs and permits the right eye to see only the right hand picture and the left eye to see only the left picture—the two are blended by the brain and the subject is seen as the eyes saw it when the picture was made.

While most of the principles that apply to the taking of regular pictures are true of stereographs, the latter require some special precautions for good results. For example, a view of a distant range of mountains would be of little or no value as a stereo subject because of the lack of foreground to give the illusion of depth. Good perspective is of extreme importance and therefore the necessity of foreground objects cannot be too strongly emphasized.

Stereoscopic pictures must have detail down to the minutest degree, so high speed lenses should only be utilized when short shutter speeds are of great importance or because of lack of light. (Small apertures, such as F. 11 to F. 22 are to be preferred.) If detail is absent there is nothing from which to form the three dimensional image. There is no "stereo."

Special cameras for the taking of three dimensional pictures are available. Outstanding are the Verascope, Heidoscop and Rolleidoscop, but these instruments are only for the advanced stereo enthusiast who wants the finest type of instrument obtainable.



A TYPICAL STEREO-GRAPH TAKEN WITH THE EHO STEREO CAMERA, ONE OF THOSE NOW DESIGNED FOR THIS WORK

Another outfit, called the "Eho Stereo Camera", consists of the camera and viewer and is one of the most complete, inexpensive and efficient instruments for three dimensional photography.

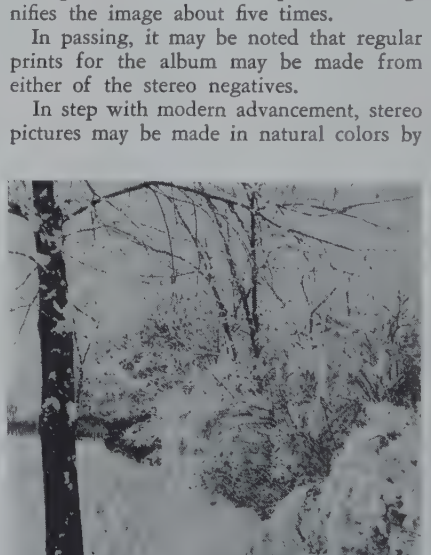
Owners of Rolleiflex, Rolleicord and Leica cameras are fortunate in that their manufacturers have made stereoscopic accessories which may be purchased and attached to their respective cameras.

The "Stereo-Fitment" for the Rolleiflex and Rolleicord is an accessory which fits on the tripod. The camera is attached to the first mentioned and the necessary separation is mechanically attained. Two exposures are necessary and must be made with the same shutter speed and diaphragm opening and as quickly as possible in succession.

The "Stereoly" attachment for the Leica, provides a simple accessory which is easy to manipulate and permits making stereo *snapshots*. It fits over the lens and makes both exposures simultaneously using half the film for each picture. Stereo negatives are printed on positive film and viewed through the Leica Stereoscope which magnifies the image about five times.

In passing, it may be noted that regular prints for the album may be made from either of the stereo negatives.

In step with modern advancement, stereo pictures may be made in natural colors by using Dufaycolor film. This film comes in sizes to fit the Leica, Rolleiflex, Rolleicord, Eho, Rolleidoscop and any other stereo camera which takes standard size roll film.



WINTER AFFORDS SUCH PHOTOGRAPHIC CHANCES AS THIS SNOW SCENE

The beauty, depth and natural appearance of a stereograph can only be fully realized by viewing some of these pictures. Imagine an excellent specimen of an orchid, a rose, a beautiful scene, or the picture of a plant, animal or insect which can be seen as often as required as it appeared naturally, *in three dimensions*. When taken in color, the beauty and lifelike appearance are beyond description.

(For the convenience of our readers, this writer has obtained descriptive material of the following items mentioned in this article: Heidoscop, Rolleidoscop, Eho Stereo Camera, Rolleiflex, Rolleicord and Leica cameras, Stereo-Fitment, Stereoly and Dufaycolor film. Address the department editor and enclose a stamped self-addressed envelope for reply.)

* * *

Shutters

When considering the purchase of a camera, the choice of its lens equipment is of primary importance. The speed and advantages of the various types together with their supplements have been discussed previously in these technical articles. We now come to the part of the camera which is of almost equal importance—the shutter. The range of instantaneous speeds and its efficiency go hand in hand with the lens to determine the versatility of a camera.

Practically all box and some folding cameras are equipped with what is known as a *rotary* or *primitive* shutter. This consists of a disk with a hole in it and a spring. When the lever is pressed, the hole passes before the lens and makes the exposure. The speed of this shutter never varies and its duration is between 1/15 and 1/30 of a second.

Better type cameras are fitted with *diaphragm* shutters; when used in cameras having more than one lens they are referred to as *between-lens* shutters. These consist of two or more leaves which open and close rapidly. Into this class falls a great variety of shutters allowing instantaneous exposures ranging from one full second to 1/500 of a second.

Much depends upon what is called the efficiency of any shutter, or the amount of light it will pass in a given time. All shutters work at their maximum efficiency when used for long instantaneous exposures (1

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sec. 1/2, 1/5 or 1/10 of a sec.) or when used in connection with a small diaphragm opening. This is clearly seen when it is understood that time is taken for the shutter to open completely and to close again. If an exposure of 1/100 of a second is given, approximately 50 per cent of this time is used in opening and closing, and the shutter is fully open for only 50 per cent of the time. Allowing a further 20 per cent representing the time during which the shutter is in action, but not fully opened, we would say that the shutter has an efficiency of 70 per cent. If the same shutter were used to give one full second exposure, the time that the shutter is in action is such a small percentage of the full exposure time that it is negligible and can be disregarded entirely and the shutter would be practically 100 per cent efficient. If the camera is used at a small diaphragm opening, the shutter would not have to open so far to be fully efficient. A first class shutter reaches an efficiency of 80 per cent but many others fall as low as 50 per cent.

* * *

"Trade Hints and New Books"

Large Pictures from Small Cameras is a small 32-page booklet giving full directions for enlarging, choice of paper, exposure, special effects, manipulations, formulae, mounting, etc. If you do your own developing, printing and enlarging, or are interested in this field, you should have this little book. Available free from this department. Please enclose a stamped self-addressed envelope plus a one cent stamp with each request.

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"The Leica Manual" by Willard D. Morgan, Henry M. Lester and Contributors—500 pages, 350 illustrations. Morgan & Lester, Publishers, One Pershing Square, New York, N. Y. Price $4.00.

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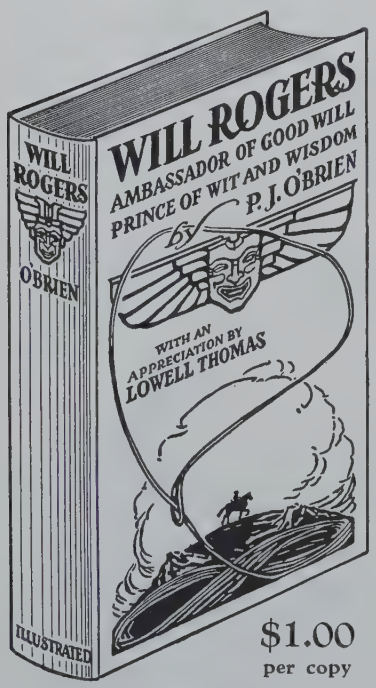

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tography has so many phases that it is hardly expected that one writer should be able to cover the entire field. The editors of the *Leica Manual* invited 22 authors to contribute 29 chapters in their own specialized field. The result is a book which can almost be called an encyclopedia on photography.

I would like to stress one point. While the *Leica Manual* covers the whole field of *Leica* photography, it is *not only* for the *Leica* owner. Miniature photography has grown to tremendous popularity and this book gives, in detail, instructions in every photographic field, which can be applied to any miniature camera. Owners of larger cameras will be delighted with the many chapters covering lenses, filters, enlarging, copying, color, infra-red, aerial photography, etc. If you are a doctor then the dental and opthalmic chapters will be of special interest. For astronomers there is the chapter on astronomical photography. The naturalist will welcome the chapters on insect and panorama photography and photomicrography. Lack of space forbids me to say more. However, I feel that the *Leica Manual* will undoubtedly prove to be the photographic "best seller" of the year.

* * *

Getting Ahead in Photography by H. Rossiter Snyder covers a range of interesting and unusual subjects. If you are interested in taking pictures which are of real human interest and having universal appeal, you should read this book by a real professional journalist-photographer who knows his subject. Fomo Publishing Co., Canton, Ohio. Price 75c.

* * *

All who have any photographic problems or difficulties, or who wish to have negatives and prints criticized, are invited to correspond with this writer who will give his personal and prompt attention to each inquiry. Address the department editor. We wish all of our readers to take advantage of this service.

Cordially,
Samuel Brown.

●

To Audubon

Fusing an already established genius as a novelist with well-rounded research and study, and adding to these a naturalist's affection for his subject, Donald Culross Peattie has written a beautiful biography in *Singing in the Wilderness*. He subtitles this "A Salute to John James Audubon", and this it is—a charming, understanding, entrancingly written book in which Mr. Peattie adds a new triumph. Dr. Herrick has given us, without any doubt, the finest and most complete works on the life of Audubon. Nothing can surpass them, or equal them. It had seemed to us that there was little more to be said, but Donald Peattie has said it. The answer lies in the fact that it is no more fair to compare Mr. Peattie's book with Dr. Herrick's than it is to compare the motion picture with the spoken stage. They both employ different methods. Dr. Herrick has painstakingly gathered, weighed and marshalled the facts into a work that will live through the ages. Upon some of these facts dealing with the early life and later romance of Audubon Mr. Peattie has built his story. He has drawn

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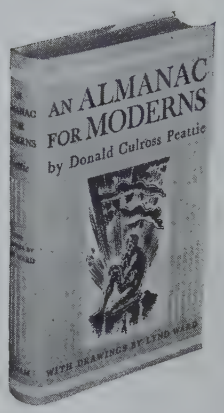

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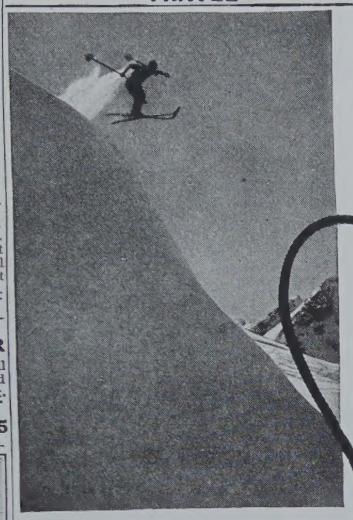

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upon his perspicacity as a novelist and brought life and action into a logical elaboration of these proved facts. He has brought Audubon, his father, his foster mother, his sister and his wife as truly to life as does an accomplished writer of fiction. And yet it is not fiction. Why bother, indeed, to try to classify this book. Suffice it that we are indebted to Mr. Peattie for having written it and to Putnam for publishing it. The price, if we may come to that, is $2.50.

Finger Lakes Birds

The bird life of the Finger Lakes section of New York, particularly those found there in the summer, is the subject of the latest Roosevelt Wild Life Bulletin to come to hand from the New York State College of Forestry at Syracuse. This is Volume Six, Number Three, of these Bulletins from the Roosevelt Wild Life Forest Experiment Station. This is the work of Charles J. Spiker, field naturalist at the Station. It is a popular account of the birds and includes many interesting pictures.

A Fitting Commemoration

Twenty-five years ago this year Glacier National Park was wisely set aside for the enjoyment of generations to come. A land of great mountains, glaciers and alpine lakes, it is also the country of the Blackfeet Indians. Theirs is a noble tribal name, and today the Blackfeet provide one of the many charms of Glacier Park. It is, therefore, particularly fitting that such a book as *Blackfeet Indians* should be published by the Great Northern Railway in commemoration of the silver anniversary of the Park that this railroad exclusively serves. Many have probably seen the beautiful calendars gotten out by the railroad presenting the splendid paintings of members of the Blackfeet Tribe done by Winold Reiss. We know of many of these calendars carefully preserved on account of these paintings.

Now comes this perfect commemorative volume. Within its covers, in large size, gorgeous in color, we find forty-nine of Mr. Reiss' paintings. Supplementing them is a concise and valuable historical account of the Blackfeet by Frank Bird Linderman, a man who has lived among the plains Indians for half a century. The whole is beautifully printed and will be coveted by anyone who sees it, for not only is it physically superb, but it is, as the foreword so well says, "a book of beauty that is sadness; of courage that inspires; of duplicity that makes a white man's conscience squirm. It is a book of loneliness, the awful loneliness that fills the world from earth to sky, when a soul has lost its gods, its faith, its bearings."

It is doubtful whether any commercial publisher would undertake the production of this book and have done it so outstandingly well. The Great Northern Railway, however, is vastly and justly proud of its identity with Glacier National Park. So, without thought of profit, it has made this significant contribution to American history, and modestly identifies itself with this book by way of a copyright line in tiny type. Copies may be obtained from the Educational Director, Great Northern Railway, St. Paul, Minnesota, at $3.50.

The Platypus

It is not strange that the platypus should have come in for so much publicity, for an animal of so many physical contradictions cannot help but attract interest. It has been described in articles, discussed in a book or two, and shown in picture. Now comes *The Platypus, Its Life and Habits* by Robert Eadie. Here we have a discussion of this duck-billed fellow, as the title suggests, and this is embellished by some sidelights on "Splash", a tame platypus. Mr. Eadie's book has the advantage of brevity and condensation, and is designed for the layman. It is, nevertheless, complete and interesting. It is published by Stilwell and Stephens Pty. Ltd., Melbourne, Australia, and it sells for five shillings five pence postpaid.

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In November

It was of November that William Cullen Bryant, who was himself born on the third of this month, wrote those lines—

> The melancholy days are come, the saddest of the year,
> Of wailing winds, and naked woods, and meadows brown and sere—

which have given permanent form to the expression of the feelings of so many in late autumn. In our own temperate zone it is indeed most likely that in November will come that interlude of rain and chill and dreariness between the glorious burst of autumn colors and the softer beauty of winter snows—time when the damp chill of the woods and the acid odor of the rain-soaked fallen leaves being worked upon by the almost omnipresent bacteria make hiking or hunting a solitary thing even with companions—time also when the coziness of the indoors is spoiled by a lingering discontent with all housing projects and a reluctance to submit again to the siege of winter.

Yet this normal expectation of November may not be realized, and instead may come a continuing Indian summer ending abruptly with a welcome snowfall just before December. Bradford Torrey wrote of such a November in 1888, and one who in the present decade annually near the end of this month goes from Potomac tidewater to the confluence of the Allegheny and Monongahela Rivers usually enjoys a pleasant November and prepares himself for a "sudden change in the weather" during his trip, with the prospect of storms and snow in the mountains. The occasion, however, remains one of thanksgiving. Only reluctantly does any lover of Nature wish elsewise the manifestations of the seasons.

If one can warm the blood to the point where the chill and dampness are realized only superficially, there is in fact a tart experience that comes with the feeling of wind and rain in the face and the push of soft earth against feet that are more used to the pounding of pavements and hard floors—an experience the tang of which finds one leaning forward eagerly. And there is an abundant reward, not only in the knowledge of one of Nature's phases but also in the objects revealed. Though the white oak still shows leaves of brown-gold or red-purple, and other broad-leafed trees are still in color, one has in the woods in November a feeling that seems to include the suggestion of a well-sophisticated bashfulness. For one then sees things that he knows his fellow creatures of the woods have meant to hide—galls and cocoons, the nests of wasps, the homes of gray squirrels in tree crotches, the pendant pouches of the orioles, the loose structures high in the trees that crows have guarded all summer, and the dozens of other nests. When he finds sticktights and burdocks on his clothes, however, the walker in woods and nearby fields is assured that he belongs in the outdoors and is serving a purpose. If he bumps a witch-hazel tree, the pods burst and he knows that he has again been useful. It seems all right then to enjoy the witch-hazel's still-lingering blossoms that are preparing for next year's seeds, as well as the hanging fruit of the sycamore, the retiring brilliance of the red of the partridge berry, the lingering goldenrods, dandelions, gentians, and asters, or the houstonia. And it is nearly as exciting to see in autumn a flower that persists after the others have gone as it is in spring to see that which comes early.

As this delight brought by the flowers late in fall recalls early spring, so also do the birds of November bring to mind the birds of March. Comparable food conditions in these two border months of winter, or some influences less apparent to the rational human mind, keep with us in November the waterfowl, grebes, loons, and other birds that feed in the rivers and ponds, leave when the ice comes, and return as soon as the sun once more seems to grow warmer. In the more northern parts of the States the month affords the year's last views of the picturesque kingfisher poised on an overhanging branch or flying away with its startling rattle. The woodcock lingers also as long as the rain-softened earth, from which the bird's flexible bill can extricate earthworms, is still unfrozen. In regions where they have made themselves at home with us Americans, the European starlings are again becoming conspicuous, gathering in flocks for their not-too-welcome winter sojourn in the shade trees of city streets or close to the sun- and steam-warmed walls of man's buildings.

In autumn the mammals, too, come more prominently into the thinking of most Nature lovers. Rabbits, foxes, and deer are brisk as the weather grows colder, and in the west the wapiti is bugling in the excitement of his mating. But the sleepers—the woodchuck, black bear, skunk, jumping mouse, and bat—are storing the last of the fat for the torpid weeks of winter, and the chipmunk is busy gathering its food for the snow-bound meals in its burrow.

The season's predominant thought is of winter to come, the library chair becomes more comfortable during the last part of the month, and as the outdoors person of other seasons—with all due thankfulness—approaches the end of another season of fruitfulness, he may turn to accounts of Nature's manifestations farther away. Perchance, he may read of eels that even as he reads are on their way to the ocean to lay their eggs and never come back to the streams, or of salmon that have already made their way up streams to lay eggs and never go back to the ocean. And the thought of cod at this season spawning off the coast of New England, laying their millions and millions of eggs, may—even with all the coolness of November—bring a reassurance of life so abundant that no oncoming winter need be feared.

By Howard Zahniser.

Modern Crusoes in the Galapagos. Above, the Wittmer family at home (Photographed by H. W. Manter), and Mrs. Wittmer preparing a snack by the open hearth of her kitchen. Left, home and garden of the late "Baroness" of Charles Island. (Photographed by H. W. Manter.) Below, the "Baroness" and her two companions, Robert Philippson beside her and Rudolph Lorenz just behind. Friedrich Ritter on one of the mountain peaks of Charles Island with Heinz Wittmer standing beside him. Below, Ritter's home (Photograph by C. McLean Fraser), and his companion, Doré Koerwin, feeding a young burro they caught in their garden. It is a descendant of those brought to the island by former settlers, perhaps those of Darwin's day a century ago.